TO ASSESS THE KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS PREVENTION OF MEDICATION ERROR IN CHILDREN AMONG STAFF NURSES WORKING AT SELECTED SETTINGS IN CHENNAI

SIGNATURE OF THE EXTERNAL EXAMINER

SIGNATURE OF THE INTERNAL EXAMINER

TO ASSESS THE KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS PREVENTION OF MEDICATION ERROR IN CHILDREN AMONG STAFF NURSES WORKING AT SELECTED SETTINGS IN CHENNAI

Dissertation submitted to

THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY

CHENNAI-600 032

In partial fulfillment of the requirement

for the degree of

MASTER OF SCIENCE IN NURSING

APRIL-2016

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Certified that this is the bonafide work of

Ms. E. Ramya.E

II Year M.Sc., Nursing

M.A.Chidambaram College of Nursing

V.H.S., T.T.T.I. Post, Adyar,

Chennai -600 113

Signature ----------

Prof. Dr. R. Sudha, R.N., R.M., M.Sc (N), Ph.D,

Principal and Professor in Nursing

M.A.Chidambaram College of Nursing

V.H.S., T.T.T.I. Post, Adyar,

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Approved by the Dissertation Committee in February -2015

PROFESSOR IN NURSING RESEARCH
Prof. Dr. R. Sudha, R.N., R.M., M.Sc (N), Ph.D.,
Principal and Professor in Nursing
M.A. Chidambaram College of Nursing
V.H.S., T.T.T.I. Post, Adyar,
Chennai - 600 113.

CLINICAL SPECIALITY EXPERT
Ms. R.Chitra, R.N.,R.M., M.Sc.(N)
Reader in Nursing,
M.A.Chidambaram College of Nursing
V.H.S., T.T.T.I. Post, Adyar,
Chennai - 600 113.

MEDICAL EXPERT
Dr.D. Velmurugan, M.D.(Paed)
Consultant Paediatrician & Neonatologist
Billroth Hospital,
Chennai-30.

Dissertation submitted to

THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY

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TO ASSESS THE KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS PREVENTION OF MEDICATION ERROR IN CHILDREN AMONG STAFF NURSES WORKING AT SELECTED SETTINGS IN CHENNAI

ABSTRACT

INTRODUCTION

A medication is a substance used in the diagnosis, treatment, cure, relief or prevention of health alterations. In fact, medications are the primary treatment for client associate with restoration of health. Too much of a medicine may cause severe unwanted effects. An expired medicine or one that is stored wrongly can be ineffective or even dangerous. An inappropriate route can cause unnecessary pain and ineffectiveness of a medication. Taking the wrong medicine can be as dangerous as being poisoned. It is the physician's responsibility to prescribe drugs in the correct dosage to achieve the desired effect without endangering the health of the child. However, nurses must have an understanding of the safe dosage of medication administration to children, as well as the expected action, possible side-effects and signs of toxicity. The safe administration of medication to children presents a number of problems that are not encountered when giving medication to adult patients. Children vary widely in age, weight, body surface area and the ability to absorb, metabolize and excrete medications. However, medication safety issues in children may be different to those for adults and require different preventive measures. Nurses working with pediatric patients require special knowledge and skills, concerning the proper care throughout the medication administration.

STATEMENT OF THE PROBLEM

A study to assess the knowledge, attitude and practice towards prevention of medication error in children among staff nurses working at selected settings in Chennai.

OBJECTIVES OF THE STUDY

- To assess the knowledge, attitude and practice of staff nurses towards prevention of medication error in children.
- To compare the knowledge, attitude and practice of staff nurses towards prevention of medication error in children.
- To correlate the knowledge, attitude and practice of staff nurses towards prevention of medication error in children
- To associate the knowledge, attitude and practice of staff nurses towards prevention of medication error in children with demographic variables of staff nurses.

METHODOLOGY

The research approach was evaluative in nature. A descriptive design was used for this study. The study was conducted among 100 staff nurses working in Kanchi Kamakoti Childs Trust Hospital, Chennai. A non-probability convenient sampling technique was used to select samples based on the inclusion criteria. Structured self administered questionnaire and likert scale was used to assess the knowledge and attitude towards prevention of medication error in children. Checklist was used to observe the practice towards prevention of medication error in children.

RESULTS

Majority (86%) of the staff nurses belonged to 20-30 years. Majority (96%) of the staff nurses were female. Regarding total years of experience, majority (73%) of the staff nurses had 1-5 years of experience. Majority (48%) of the staff nurses had maximum work experience in paediatric intensive care units. The assessment of level of knowledge towards prevention of medication error in children among staff nurses showed that 53% of them had moderately adequate knowledge. The assessment of level of attitude towards prevention of medication error in children among staff nurses showed that 62% of them had favourable attitude. The assessment of level of practice towards prevention of medication error in children among staff nurses showed that 85.2% of the staff nurses had good practice. There was a significant difference between knowledge, attitude and practice of staff nurses towards prevention of medication error in children at 0.05% level of significance. There was a positive, significant and moderate correlation between knowledge, attitude and practice of staff nurses towards prevention of medication error in children at 1% level of significance. There was a significant association between level of knowledge, attitude and practice towards prevention of medication error in children and demographic variables such as age, educational status, total years of experience as staff nurse and total years of experience in paediatric unit/ward at 5% level of significance.

CONCLUSION

It is possible to eliminate medication errors. However, the nurses play a vital role in reducing and preventing medication error in children. Nurses had adequate knowledge, favorable attitude and good practice towards prevention of medication error in children. This study proved a significant, positive, moderate correlation between knowledge, attitude and practice of staff nurses towards prevention of

medication error in children. There was a statistically significant association between knowledge, attitude and practice of staff nurses towards prevention of medication error in children with age, educational status and total years of experience. It seems that education and experience serves to increase nurses confidence and overcoming oppression towards safe administration of medication in children.

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CHAPTER-1

INTRODUCTION

A medication is a substance used in the diagnosis, treatment, cure, relief or prevention of health alterations. In fact, medications are the primary treatment for client associate with restoration of health. Too much of a medicine may cause severe unwanted effects. An expired medicine or one that is stored wrongly can be ineffective or even dangerous. An inappropriate route can cause unnecessary pain and ineffectiveness of a medication. Taking the wrong medicine can be as dangerous as being poisoned. (Nishamane,2010).

It is the physician's responsibility to prescribe drugs in the correct dosage to achieve the desired effect without endangering the health of the child. However, nurses must have an understanding of the safe dosage of medication, administration to children, as well as the expected action, possible side-effects and signs of toxicity. Unlike with the adult medication, there are few standardized, pediatric drug dosage ranges and with a few exceptions, drugs are prepared and packaged in average adult dose strength. Medication errors in pediatric patients occur at similar rates as in adults but have three times the potential to cause harm. (Hanan,T. et al. 2012).

The safe administration of medication to children presents a number of problems that are not encountered when giving medication to adult patients. Children vary widely in age, weight, body surface area and the ability to absorb, metabolize and excrete medications. Nurses must be particularly alert when computing and administering drugs to infant and children. Drug administration is a vital part in the care of the children. (Mathew,T,.2012).

Medication errors are believed to be the most prevalent type of medical error and are a significant cause of preventable adverse event on the pediatric population. Newborns, children and adolescents have different physiological, pharmacokinetic and pharmacodynamics parameters compared to adults, as well as developmental limitations that affect their ability to communicate and self-administer medications. Another important factor is that, the majority of medications are developed in adult concentration. Therefore, pediatric indication and dosage guidelines are often not included with a medication. (Mathew,T,.2012).

The most important aspect for selection of a drug and establishment of the proper pediatric dosage is the acknowledgment that the pediatric patient is not just a small adult.The differences are mainly related to the changes occurring during growth and maturation and require individual dosages. Thus, guidelines of specific dosages and useful means for calculation of pediatric dosages must be developed in order to enhance the effectiveness and therapeutic limit and prevent serious adverse effects. (Jose, A,. 2011).

The World Health Organization Collaborating Centre for Patient Safety (2010) has released nine lifesaving patient safety solutions, which address the issues of medication safety. The issues include look-alike, sound-alike medication names, patient identification, concentrated electrolyte solutions, and assuring medication accuracy at transitions of care. However, medication safety issues in children may be different to those for adults and require different preventive measures. Nurses working with pediatric patients require special knowledge and skills, concerning the proper care throughout the medication administration.

BACKGROUND OF THE STUDY

Medication therapy is one of the most complex and high-risk clinical processes that nurses deal with.Medication error is the most common type of error that brings about damage and death to patients, especially pediatric ones. (American Academic of Paediatrics, 2011).

The medication administration process is an everyday part of nursing practice and is so much more than a simple psychomotor task. Nurses have the central role in this process. In the acute care setting of a hospital, the medication process is complex and time consuming, occupying uptoone-third of the nurses time. It is often carried out under stressful circumstances and is probably the highest risk activity a nurse performs. (Vijay, R,. 2005)

Pediatric medication errors are different from those occurring in adult because doses are individually based according to weight, age and body surface area. Most errors occur in the intensive care units such as paediatric and neonatal intensive care units where the intensity of care is high. The patients are frequently unable to communicate symptoms and the clinical signs may be difficult to elicit. The rate of medication errors reported is increasing over the year, which requires immediate intervention (Jain, 2009).

Medication errors have been recognized as an area of grave concern and are preventable adverse events in all age group of patients. Medication errors with pediatric patients have occurred at every stage of the process. The stages of the medication process include ordering, prescribing, transcribing, verifying, dispensing, delivering and administering (Antonow, et al. 2010).

Medication administration errors were classified in to 10 categories: It included timing error (greater than 1 hour difference compared with the ordered time), omission, unordered drug, wrong generic drug, wrong dosage, wrong formulation, wrong route, deteriorated drug, technical errors in preparation (eg wrong infusion flow rate or Wrong diluents) and extra dose (Fontan,et al.2005). Reporting error is fundamental to error prevention. Reporting reduces the adverse effects of error and effectively helps to avoid future errors that can cause patient harm.

A Study of Cheragi,M.et al.(2013) to identify medication errors and its causes in emergency department of Imam Khomeini Hospital, showed that most prevalent types of medication error were related to infusion rate (33.3%), and administering two doses of medicine instead of one (23.8%). The report highlighted that most important causes of medication error were shortage of staff nurses (47.6%) and lack of sufficient pharmacological information (30.9%).

Another study results revealed that highest types of medication errors as reported by the nurses were delivery of medication by the wrong route (28.80%) followed by changing of medication (25%) and (23.80%) due to frequency of medication. As regard to stages of error,missing of medication in (35%), patient monitoring(31.30%) and administration(25%). Concerning causes of error, the highest cause of medication error was due to heavy workload (51.3%), personal neglect (27.5%), whereas, the lowest cause of medication error was due to unfamiliarity with medication (20%). Most medication errors occur when a nurse become distracted or fails to follow routine procedures such as checking dose calculations, deciphering illegible handwriting or administering medications with which the nurse is unfamiliar. (Hanan,A. &Bakr,M. 2012) .

Medication administration is one of the most important duties of nurses. It requires a particular set of knowledge and attitude to be implemented correctly. Medication errors can put nursing practice at risk and can create preventable risk for children. Nurses hold responsibility for taking care of children and providing safety for them. Therefore, medication administration and preventing medication errors impose more obligationson them. (Tang, et al. 2007).

The nurse accepts full accountability and responsibility for all actions that are taken,this includes the administration of medication.Each child to whom a medication is administered has five “rights,” which, if adhered to, will prevent most drug errors. The sixth right has been added to this listing because it also provide a measure of safety when parents give medication to their child. These rights include the following, the right patient, the right drug, the right dose, the right route, the right time, and the right of the parents and child “to know.” (Nishamane,2010).

NEED FOR THE STUDY

Errors are an integral part of human life. Many errors originate from the natural process of cognitive and behavioural adaptation which develop the correct behavioural skills. Exclusion of medical order is an important part of healing process and patient care.It is also the main component of nursing performance and has a prominent role in patient safety.

Paediatricpopulation are at significant risk for drug related error. The paediatric nurse plays an important role in medication administration to children.Nurses working with paediatric patients require special knowledge and skills concerning the proper care throughout the medication administration to children. The need for accuracy in preparing and giving medications to children is greater than that of adult. Since the pediatric dose

is often relatively small in comparison with the adult dose, a slight mistake in the amount of a administration drug represents a greater error.(Jose, A. 2011).

Overall, in the developed and developing countries, it is difficult to acquire accurate estimates about medication administration errors due to absence of a proper recording and reporting system and shortage of research information, but experts speculate that the rate of these errors is high. (Nejad, M. et al. 2010)

The main professional goal of nurse is to provide and improve human health. Medication errors are among the most common health threatening mistakes that affect patient care. Such mistakes are considered as a global problem which increases mortality rates, length of hospital stay, and related costs. (American Academic of Paediatrics, 2011).

Nurses are the key personnel in administering the drugs. Nurses must administer drugs daily in a safe and efficient manner. The nurse should administer drugs in accord with nursing standards of practice and organizational policy. The safe storage and maintenance of an adequate supply of drugs are other responsibilities of the nurse. Even though nurses are skilled personnel in administering drugs, still many studies showed high incidence of medication errors. So after searching and analyzing many studies, the investigator found that there is a need to assess the nurse's knowledge, attitude and practice regarding prevention of medication error in children among staff nurses in pediatric setting.

STATEMENT OF THE PROBLEM

A study to assess the knowledge, attitude and practice towards prevention of medication error in children among staff nurses working at selected settings in Chennai.

OBJECTIVES OF THE STUDY

- To assess the knowledge, attitude and practice of staff nurses towards prevention of medication error in children.
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- To associate the knowledge, attitude and practice of staff nurses towards prevention of medication error in children with demographic variables of staff nurses.

OPERATIONAL DEFINITIONS

ASSESS

It is the act of gathering information regarding prevention of medication error in children using structured questionnaire and analyzing the data using statistical methods.

KNOWLEDGE

It refers to understanding and information possessed by the staff nurses regarding prevention of medication error in children which was elicited through structured questionnaire.

ATTITUDE

It refers to a way of thinking and feeling towards prevention of medication error in children which was elicited through likert scale.

PRACTICE

Practice refers to specific intentional actions preformed by the staff nurses to prevent medication error in children which was observed using checklist.

MEDICATION ERROR IN CHILDREN

A medication error refers to any preventable event that may cause or lead to inappropriate medication use or client harm while the medication is in the control of the health care professional. Children refers to birth to eighteen years of age who are admitted in KanchiKamaKoti Childs Trust Hospital.

STAFF NURSES

Staff nurses refer to qualified and trained nursing personnel working at KanchiKamakoti Childs Trust Hospital, Chennai.

HYPOTHESIS

- There is no significant difference between knowledge, attitude and practice of staff nurses towards prevention of medication error in children.
- There is no association between the experience of staff nurses and knowledge, attitude and practice of staff nurses towards prevention of medication error in children.

ASSUMPTIONS

- The knowledge, attitude and practice of staff nurses towards prevention of medication error will vary.
- The knowledge, attitude and practice of staff nurses towards prevention of medication error will be influenced by their age and qualification.

DELIMITATIONS

- The duration of study is limited to four weeks.
- The study is limited to the particular setting.

PROJECTED OUTCOMES

- The study will help to assess and compare the knowledge, attitude and practice towards prevention of medication error in children among staff nurses in selected pediatric settings.
- It will help us to identify appropriate and inappropriate practices towards prevention of medication error in children.
- The findings of the study will help the investigator to make recommendations to prepare a protocol or module to prevent medication error in children.

CONCEPTUAL FRAMEWORK

Conceptual framework is a brief explanation of a theory or those portions of theory to be tested in a study (Groove,2003). Polit and Hungler(1989) described conceptual framework “as a group of mental images or concepts that are related but the relationship is not explicit.” It is an abstract and logical structure that enables the researcher to link the findings to the nursing body of knowledge. The conceptual framework gives the idea of the investigator’s main view and common themes of the research in the form of the visual diagram by which the investigator explains the specific areas of interest.

The conceptual framework adopted for this study is based on **Pender’s Health Promotion Model (1996)**. The model focuses on individual characteristics and experience, behaviour – specific cognition and affect and behavioural outcome.

The health promotion model notes that each person has unique personal characteristics and experiences that affect subsequent actions. It describes the multidimensional nature of person as they interact with the environment to pursue health. The set of variables for behavioural specific knowledge and affect have important motivational significance. The variables can be modified through nursing actions. Health promotionbehaviour is the desired behavioural outcome and is the end point in the Health promotion model.

Individual characteristics and experience

a. Prior related factors: It influences subsequent behaviour through perceived self-efficacy, benefits, barriers and affects related to that activity. It refers to the staff nurses past clinical experience, educational qualification and training on medication administration.

b. **Personal factors:**Personal factors categorized as biological, psychological andsocio- cultural. These factors are predictive of a given behaviour and shaped by the nature of the target behaviour being considered. It refers to the demographic variables of age, gender, educational status, total years of experience as staff nurse, total years experience in paediatic unit/ward, maximum working experience, current working status and commission of mediation error.

1. **Behaviour/specificfactors:**Thesevariables are considered to bevery significant in behaviour motivation.They are a core for intervention because they may be modified through nursing actions.

a. **Perceived benefits of action:** The perceived benefits of a behaviour are strongmotivators of that behaviour. It refers to benefits of medication error such as reduction of unnecessary pain, improving the effectiveness of a medication and quality of nursing care.

b. **Perceived barriers to action:** Barriers are perceived unavailability, expense**,** difficulty or time regarding health behaviours. It refers to the perceived problem related to medication administration which includes no barriers or barriers related to medication administration like inadequate pharmacological knowledge, lack of skill in medication administration, wrong time, routeand medication, heavy work load, unsafe work environment and work place stress of staff nurses.

c. **Perceived self efficacy :**It is one's belief that one is capable of carrying out a healthybehaviour. It refers to self perception of knowledge, attitude and practice of staff nurses on their ability in medication administration.

d. **Activity related affect :**The feeling associated with a behaviour will likely affectwhether an individual will repeat or maintain the behaviour. It refers to positive and negative feeling of the staff nurses towards prevention of medication error.

e. **Interpersonal influences :**These are feelings, thoughts regarding the beliefs or attitude of others. The interpersonal influences for staff nurses are the influence exerted by ward incharge/supervisor peer, mentor, physician, patient and care givers.

f. **Situational influences:** These are perceived options available, demandcharacteristics, and the aesthetic features of the environment where behaviour takes place. The situational influences for staff nurses are such as work environment, work place stress, work load, working hours, staff;patient ratio, facilities and communication etc.

3. Behavioral outcome: It refers to outcome of the assessment on knowledge, attitude and practice towards prevention of medication error in children among staff nurses. In which knowledge is categorized as adequate knowledge, moderately adequate knowledge and inadequate knowledge. Regarding attitude of staff nurses which is categorized as favourable attitude, moderate favourable attitude and unfavourable attitude and practice of staff nurses are categorized as good practice, moderate practice and poor practice.

Cues to nursing action: Health promotion behaviour should result in improvedhealth, enhanced functional ability and better quality of life at all stages of behaviour. Here response of staff nurses provide cues for nursing action like awareness through continuing nursing education programme on safe medication administration, preceptorshipprogramme, standard protocol on medication administration, and safe environment.

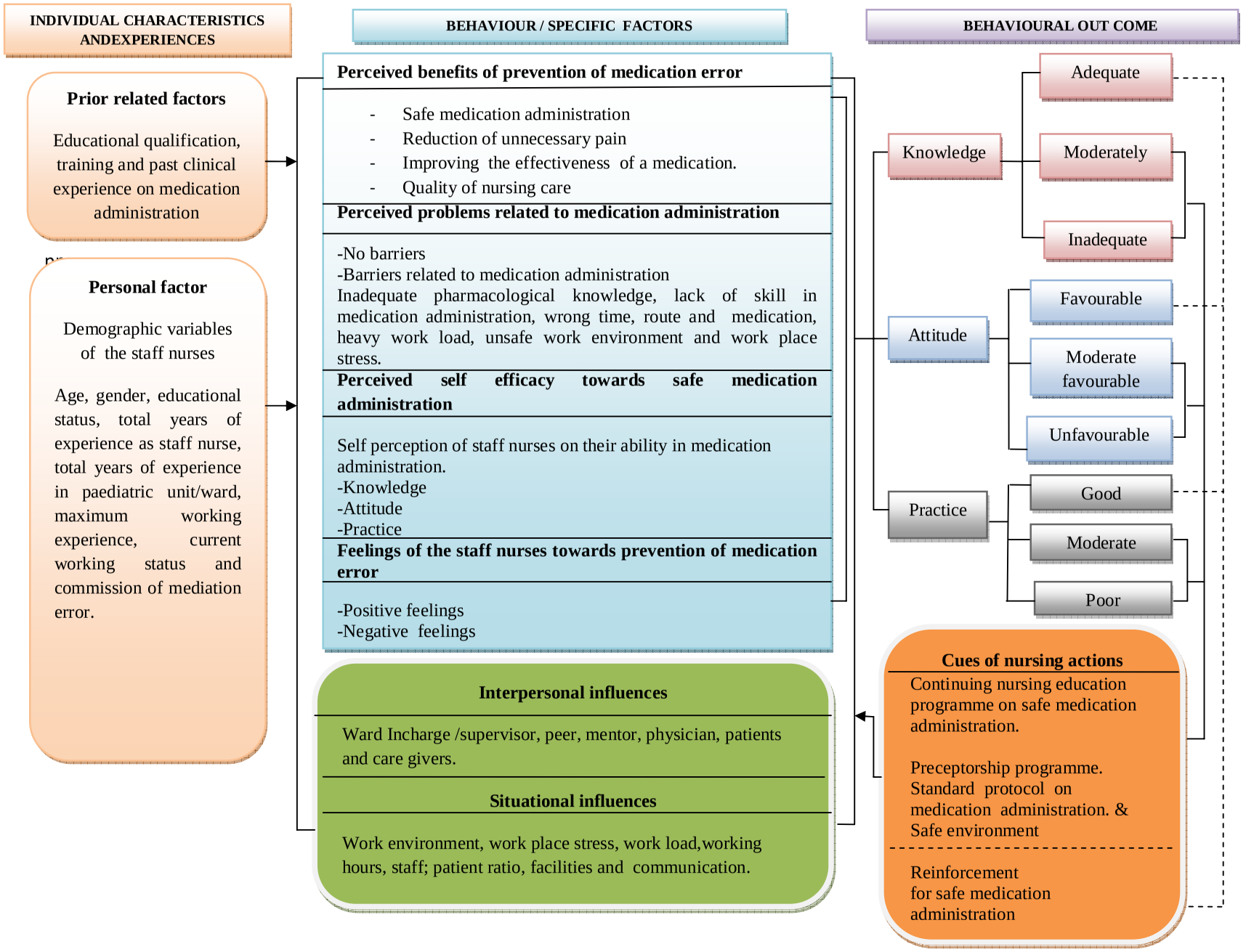

FIGURE:1 CONCEPTUAL FRAME WORK ON PENDER'S HEALTH PROMOTION MODEL (1996)

CHAPTER –II

REVIEW OF LITERATURE

Review of literature is the systematic and critical review of the important published scholarly literature on particular topic. A literature is an organized written presentation of what has been published on a topic by scholars (Burns & Groove, 2004).

This chapter mainly deals with the review done on related materials to this study from various sources (Texts, Journals and Internet etc). The review enabled the investigator to develop an insight into the problem area. Various studies reviewed also have helped the investigator in building the base for this study.

The related literature for the present study has been organized under the following headings.

Part1: Information related to medication error

Part 2: Studies related to medication error in children.

PART1: INFORMATON RELATED TO MEDICATION ERROR

Definition

“A medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing, order communication, product labeling, packaging, and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use."**(National coordinating council for medication error reporting and prevention,2010).**

Types of medication error

Prescribing error

A clinically meaningful prescribing error occurs when, as a result of a prescribing decision or prescription writing process, there is an unintentional significant reduction in the probability of treatment being timely and effective or increase in the risk of harm when compared with generally accepted practice.

Administration error

Wrong route of administration of the correct drug

Monitoring error

Failure to review a prescribed regimen for appropriateness and detection of problems, or failure to use appropriate clinical or laboratory data for adequate assessment of patient response to prescribed therapy.

Communication error

Miscommunication among physicians, pharmacists, and nurses about medication administration.

Causes of medication error

The following as causative factors for medication errors

- Too many telephone calls
- Overload/ unusually busy day
- Too many customers
- Lack of concentration
- Lack of appropriate labeling
- Similar drug names
- Misinterpreted prescription

- Inexperienced physicians and nurses,
- Complex or urgent care
- Miscommunication of drugs orders
- Improper documentation
- Illegible handwriting
- Inadequate nurse-to-patient ratios
- Inappropriate abbreviations

Effects of medication error

Adverse drugs event

An adverse event is an injury caused by medical management rather than the underlying condition of the patient. An adverse event attributable to an error is a preventable adverse event.

Sentinel events

An unexpected occurrence involving death or serious physical or psychological injury, or the risk thereof. The phrase ‘or the risk thereof’ includes any process variation for which a recurrence would carry a significant chance of a serious adverse outcome.” Sentinel events are so named because they signal the need for immediate investigation and response.

Near miss

Near misses are potential adverse events, errors that could have caused harm but did not, either by chance or because something or someone in the system intervened. Near misses provide opportunities for developing preventive strategies and actions and should receive the same level of scrutiny as adverse events.

Strategies to prevent medication error

- Heighten awareness of reporting systems available to or within health care organizations.
- Stimulate and encourage reporting and sharing of medication errors both nationally and locally.
- Develop standardization of classification systems for the collection of medication error reports so that databases will reflect reports and categorization systems.
- Encourage systems and provide targeted feedback so that appropriate prevention strategies can be developed and implemented in facilities.
- Assess current knowledge of medication errors through ongoing efforts (for example, literature searches) to gather data associated with the scope of problems, types of errors, causes and sources of errors, and clinical and financial impact on patients and the health care delivery system.
- Identify gaps in research that hinder the understanding of medication errors
- Promote research to expand knowledge regarding medication errors, their causes, and the effectiveness of interventions.
- Encourage standardization of processes to prevent error-prone aspects of drug procurement, prescribing, dispensing, administration, disposal.
- Encourage shared accountability and systems-based solutions to enhance the safety of medication use and to minimize the potential for human error.
- Promote/encourage the safe use and understanding of technology in the prevention of medication errors.
- Educate consumers and patients regarding strategies to prevent medication errors for both prescription and nonprescription medications.

PART 2: STUDIES RELATED TO MEDICATION ERROR IN CHILDREN.

Abusaad, F.S.,&Etawy, E.A. (2015) conducted a descriptive study to examine the types, stages and causes of medication errors among staff nurses from Children's Hospital at Mansoura University. A total number of 80 staff nurses were selected for this study and data were collected using structured interview questionnaire. The study results revealed that medication error occurred in children due to wrong route (28.80%),missing ofmedication(35%),inadequate patient monitoring(31.30%), wrong administration(25%), wrong documentation(15%), and heavy workload (51.3%). The researcher concluded that safe working environment, reporting system and good communication between physician and nurses will reduce the medication error.

Mi-Hyeon Choe, M. et al. (2015) conducted a cross sectional study on nurses' perceptions of medication errors and their contributing factors in South Korea. A total of 312 staff nurses were included for this study. The study results revealed that nurses perceived that the most common reasons for medication error were inadequate number of nurses in each working shift, fears of being blamed, administering drugs with similar names or labels, incorrect patient, incorrect medication doses and drug. The researcher concluded that ongoing education, training regarding safe medication and non punitive methods are the strategies to reduce the medication error.

Rezaei, S.A. et al (2015) conducted a descriptivestudy to determine the incidence of medication errors and factors affecting it according to nurses' self-report. A total number of 100 staff nurses were selected for this study. Data were collected using questionnaire. The results of this study showed that the most important factors affecting the incidence of errors include workplace stress, working in the intensive care units,

tiredness due to work load, and inappropriate nurse physician relationship. The study concluded that, in-service training for new nurses regarding medication errors, positive relationship between nurse managers and nursing staff and creating a reporting system were the intervention necessary to reduce the medication error in children.

Christosvarounis, D. et al. (2014) conducted a meta-analysis to assess the medication errors rate in pediatric patients. Samples were selected from pediatric inpatients in emergency department aged 0-16 years. The study findings revealed that medication errors occurred in the stages of prescribing (p=0.175), dispensing (p=0.065), and drug administration (p=0.316). The researcher concluded that clinical teaching programmes among staff nurses about safe administration practices would reduce the medication error.

Karavasiliadou1.S &Athanasakis.E (2014) conducted a descriptive study to identify factors contributing to medication error in clinical practice. A total number of 284 staff nurses were selected for this study and data were collected using structured questionnaire. The study results revealed that shortage of nurses or insufficient staffing pattern, heavy work load and ineffective work caused the medication error.

Valwilson, A. et al. (2014) conducted a systematic literature review to identify factors contributing to medication administration errors in children. The following databases were used for the study; Medline, Embase, Cinahl and the Cochrane library. This review revealed that factors contributing to medication administration errors were nurses workload, failure to adhere to policy and guidelines, interruptions, inexperience and insufficient nurse education from organizations. The study review concluded that strategies to reduce medication errors in children were double checking by two nurses,

implementing educational session and use of computerized prescribing and barcoding administration systems.

Wail, A. et al. (2014) conducted a descriptive study to analyze medication incident rate at Jordanian Teaching Hospital. A total number of 10042 incident reports were retrieved in this study, in that 3165 incident reports were related to medication error. The study results revealed that around 86% of reported incidents were near miss incidents and captured before reaching the patient and incorrect dose accounted for more than 52% of the reported incidents. The researcher concluded that effective reliable medication error reporting system could provide direction on reducing medication errors.

Zagheri, P. et al. (2014) conducted a qualitative study to assess the Iranian nurses' perspectives on factors influencing medication error. A total of 20 nurses were selected using purposeful sampling technique.The data was collected using semi-structured interviews and analyzed using deductive content analysis approach based on Reason's human error model. The study results showed that individual approach including personal and psychological characteristics of nurses, the cultural and the organizational approach including workplace conditions, nurses' pharmacological knowledge and inevitable nursing errors influence the medication error. The study concluded that comprehensive educational programs and providing constructive feedback in a favorable learning climate is essential to improve the medication safety among staff nurses.

Alierza, A. et al (2013) conducted a systematic literature review to examine severity of medication error in Iran. Eighteen articles were reviewed in this study. The study findings revealed that prevalence of medication administration error ranged

from14.3%-70.0%, prescribing error 29.8%-47.8%, dispensing and transcribing errors were from 11.3%-33.6% and 10.0%-51.8% respectively.

Human manoocheri, M. et al. (2013) conducted a cross sectional study to determine the types and causes of medication errors among staff nurses. A total numberof 237 nurses were randomly selected from nurses working in Imam Khomeini Hospital (Tehran,Iran).Data were collected using structured questionnaire. The study results revealed that medication errors had been made by 64.55% of nurses.The most common causes were using abbreviations instead of full names of drugs, similar names of drugs and lack of pharmacological knowledge.

Jaromi.s.et al. (2013) conducted a cross sectional study to identify factors contributing to medication error in Iranian. A total of 97 nurses were selected for this study and data were collected using questionnaire. The study findings revealed that low nurse to patient ratio, high work load and improper work assignment were found to be the most important factor contributing to medication error incidents.

Odhiambo, J.et al. (2013) conducted a cross sectional study to determine the factor influencing quality management of medication by the nurses at Kenyatta National Hospital. A total of 80 staff nurses were selected for this study and data was collected using structured questionnaire.The study results reported that high work load (90%),language barrier (56%),absenceof paediatric formulation (55%), multiple task (21%), lack of support (20%) and limited physical space (19%) were the main challenges that nurses encountered during drug administration.

Oslhikoya, et al. (2013) conducted a study to assess the medication administration error in Nigerian Hospital. A total number of 50 staff nurses were selected for this study. Data were collected using structured questionnaire. The study findings reported that majority (64%) of the nurses committed medication error.

Shahrokhi, A. F.et al (2013) conducted a descriptive study to investigate the factors contributing to medication error in Qazvin university hospitals. A total of 150 nurses were selected by proportional random sampling, and data were collected by questionnaire. Thestudy revealed that the most common causeswereinaccuracy(41%),wardcrowdedness(13.1%), physician and nurses' illegible handwriting (11.5%) and intravenous route (67%). The researcher suggested that improving working conditions for nurses, improving nurses' pharmacological knowledge, encouraging nurses to report their errors, promoting culture patient safety and setting up a system to record medical errors were the measures to reduce the medication error.

Hanan,A.andBakr,M. (2012) conducted a descriptive study to examine the medication error, causes and reporting behavior as perceived by nurses in Egypt. A total number of 180 nurses were selected using convenient sampling technique.A survey method was used to collect the data were using the modifying gladstone's scale of medication error.The study revealed that most causes of medication error occurred was the failure of nurse to check the patient name band with medication administration record, wrong dose and illegible hand writing. The researcher concluded that immediate reporting and proper documentation is necessary to reduce the medication error.

Murphy and While (2012) conducted a non-experimental study to describe the contributing factors to medication administration errors.A 140 paediatric nurses were

selected for this study. The study findings revealed that workload stress and communication failure were reported by 78% and 71% of the staff respectively, as potential contributors for medication error.

Duggan,C.et al.(2011) conducted a prospective study to determine the epidemiology of medication error. The study results revealed that in total,1220 children and adolescents under 18 years of age experienced medication error due to wrong dose [n = 395],wrong medication [n = 597], wrong route [n = 133], and wrong time [n = 110]). Prescribing and dispensing errors accounted for 0.68% (n = 16) and 2.26% (n = 53) of errors, respectively. The researcher concluded that collaboration between pharmaceutical manufacturers, consumers, medical and regulatory communities is needed to advance patient safety and reduce medication errors.

Ozkan, et al. (2011) conducted a mixed method design study to explore the factors associated with medication administration errors in a pediatric hospital, Turkey. A total number of 25 nurses were selected and observation method was used to collect the data. The study results revealed that the nurses identified workload, insufficient protocols, interruption and lack of experience as contributing factors lead to medication error.The investigator implied comfortable and safe working environment will help to reduce the medication error.

Shara, M.(2010) conducted a descriptive study to determine the factors contributing to medication errors in Jordan. A total of 126 staff nurses were selected for this study and data were collected using structured questionnaire. The study findings revealed that highest level of medication errors were 48.4%, 31.7% and 11.1% related to nurses, physicians and pharmacists, respectively.

Marlene, R.et.al (2007) conducted a systematic literature review to synthesize peer reviewed knowledge on children's medication errors and recommendation to improve pediatric medication safety. Data were collected from Pubmed,Embase and Cinahl from January 2000 to April 2005.From 358 articles identified, 31 were included for data extraction. Dispensing and administering errors were the most poorly and non uniformly evaluated. The review showed that the pediatric error types were ranging from: prescribing 3-37%, dispensing 5-58%, administering72-75% and documentation 17-21%. The review concluded that dispensing and administration were the most common medication error in children.

Tang, et.al. (2007) conducted a study to investigate nurses view on the factors contributing to medication errors in the hope of facilitating improvements to medication administration process. The result reported that 76.4% of nurses believed more than one factor contributed to medication error. Personal neglect (86.1%), heavy work load (37.5%) and new staff (37.5) were the three main factor. Medical wards (36.1%) and intensive care units (33.3%) were the two most error prone places. The errors common to the two were wrong dose (36.1%) and wrong drug (26.4%). Antibiotics (38.9%) were the most commonly misadministered drugs.

CHAPTER –III

METHODOLOGY

This study was undertaken to assess the knowledge, attitude and practice towards prevention of medication error in children among staff nurses working at selected settings in Chennai.

This chapter includes research design, settings of the study, population, sampling technique, criteria for selection of samples, sample size, description of the tool, validity of the tool, pilot study and procedure for data collection and plan for data analysis.

SCHEMATIC REPRESENTATION OF METHODOLOGY

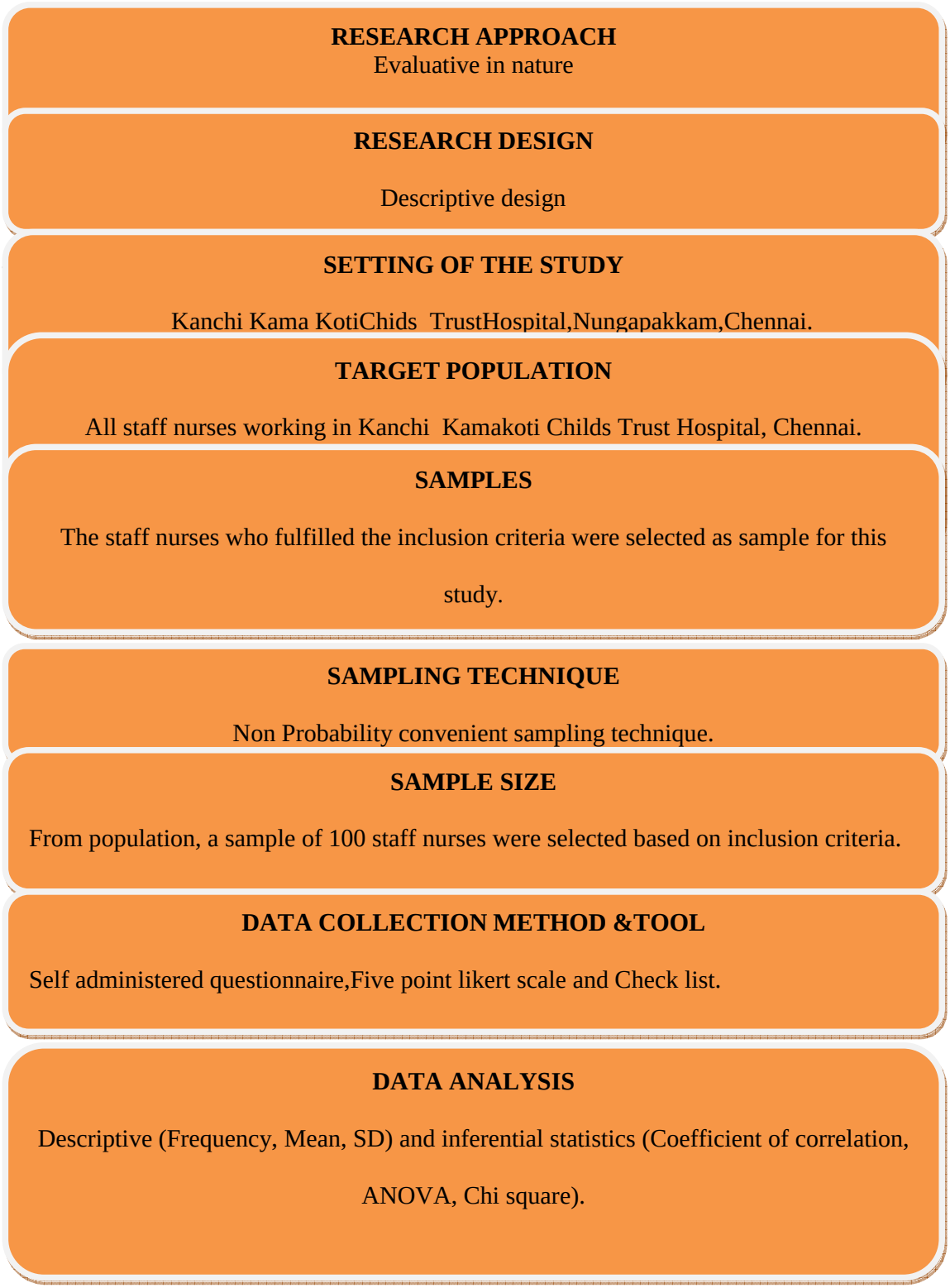

Figure: 2 Schematic representation of methodology

RESEARCH APPROACH

The research approach was evaluative in nature.

RESEARCH DESIGN

A descriptive design was used for this study.

MAJOR VARIABLES OF THE STUDY

The major variables in the study were knowledge, attitude and practice of staff nurses towards prevention of medication error in children.

RESEARCH SETTING

The study was conducted in KanchiKamakoti Childs Trust Hospital, Chennai.

POPULATION

The population for this study included all staff nurses working atKanchi Kamakoti ChildsTrust Hospital in Chennai.

SAMPLE

The staff nurses who fulfilled the inclusion criteria were selected as samples for this study.

CRITERIA FOR SELECTION OF SAMPLE

Inclusion criteria

1) Staff nurses both male and female who were willing to participate in the study

2) Staff nurses who were available during data collection period.

3) Staff nurses who had completed D.G.N.M, B.Sc(N), P.B.B.Sc(N) and M.Sc.(N) working at KanchiKamakoti Childs Trust Hospital, Chennai.

Exclusion criteria

1) Staff nurses who were on induction cum training period.

2) Staff nurses who were working in operation theatre.

3) Samples of pilot study.

SAMPLE SIZE

From population, samples of 100 staff nurses were selected based on inclusion criteria.

SAMPLING TECHNIQUE

A non-probability convenient sampling technique was used to select samples.

TOOL FOR DATA COLLECTION

A structured questionnaire was used as a tool for data collection.

DESCRIPTION OF THE DATA COLLECTION TOOL

The tool was prepared based on the information gathered from the review of literature and objectives of the study. It consisted of four parts:

PART I – Demographic Variables:

It consisted of items to assess the demographic variables like age, gender, education, total years of experience, experience in pediatric unit etc.

PART II – Assessment of knowledge:

It consisted of 20 structured multiple choice items to assess the knowledge towards prevention of medication error in children. The item covered the various aspects of medication error which are as follows:-

S. No	Aspects	Question no	Total
1.	Meaning	1,9,12,19	4
2.	Causes	2,7,8,11,13,15,16,17	8
3.	Management	5,6,10,14,18	5
4.	Prevention	2,4,3	3

Each item consisted of one right answer or key and three distractors.

PART III- Assessment of attitude:

Five point likert scale(agree, strongly agree, uncertain, disagree, strongly disagree)was used to assess the attitude towards prevention of medication error in children. It consisted of sixteen items including equal number of both positive(8) and negative(8) statements.

PART IV-Assessment of practice:

Checklist was used to observe the practice towards prevention of medication error in children. Itconsisted of thirty statements and each statement with two options such as “Yes” and “No”.

SCORING AND INTERPRETATION OF THE DATA

PART II- Assessment of knowledge:

Knowledge was assessed using 20 multiple choice items. Each right answer was given a score of one and the total score was calculated. The total score was 20.

The percentage was calculated as follows:-

Percentage= $\frac{ObtainedScore}{TotalScore} x\ 100$

Based on the percentage, the samples knowledge was grades as follows:-

PERCENTAGE	GRADE
> 75%	Adequate knowledge
50-75%	Moderately adequate knowledge
< 50%	Inadequate knowledge

PART III– Assessment of attitude:

Five point likertscalewas used to assess the attitude, which consisted of 16 items. Each positive item was given score like strongly agree-5,agree-4, uncertain-3,disagree-2 and strongly disagree-1. Each negative item was given score like strongly disagree-5, disagree-4, uncertain-3, agree-2, strongly agree-1. The total score was 80.

The percentage was calculated as follows:-

Percentage $= \frac{ObtainedScore}{TotalScore} x\ 100$

Based on the percentage, the samples attitude was graded as follows:-

PERCENTAGE	GRADE
> 75%	Favorable attitude
0-75%	Moderate attitude
<50%	Unfavorable attitude

PART IV- Assessment of practice:

Checklist was used to observe the practice, which consisted of 30 items. Each appropriate practice (Yes) carried one mark and inappropriate practice (No) carried zero mark. The total score was 30.

The percentage was calculated as follows:-

Percentage $= \frac{ObtainedScore}{TotalScore} x\ 100$

Based on the percentage, the samples practice was graded as follows:-

PERCENTAGE	GRADE
> 75%	Good practice
50-75%	Moderate practice
< 50%	Poor practice

CONTENT VALIDITY OF THE TOOL

The tool was validated by the experts in the field of Paediatric Medicine and Paediatric Nursing.

RELIABILITY

The reliability of the knowledge and practice tool was checked using Test-retest method and attitude tool was checked using spilt half method. The reliability value for knowledge, attitude and practice tool was 0.83, 0.82 and 0.78 respectively.

PROTECTION OF HUMAN RIGHTS AND ETHICAL CONSIDERATION

The study was approved by the ethical committee constituted by the college. Permission was obtained from the Medical and Nursing Directors of KanchiKamakoti Childs Trust Hospital to conduct the study. Informed consent was obtained from the samples to participate in the study.

PILOT STUDY

After obtaining approval from the research committee in the college, the permission was obtained from the Medical and Nursing Director of KanchiKamakoti Child Trust Hospital to conduct the pilot study from 14.5.2015 to 15.5.2015. After a brief introduction to the samples, their inclusion to participate in the study was assessed and the informed consent was obtained. From the population, 10 staff nurses both male and female working in intensive care unit were selected using convenient sampling technique. Self-administeredstructured questionnaire was used to collect data regarding demographic variables and knowledge of the staff nurses towards prevention of medication error in children. Five pointlikertscale was used to assess the attitude andchecklist was used to observe the practice towards prevention of medication

error in children. It took approximately two hours to collect data from each sample. The collected data was analyzed using descriptive and inferential statistics.

PILOT STUDY RECOMMENDATIONS

There is no practical difficulties experienced in the sample selection. The tool was feasible and the main study was carried out without any modification of the pilot study.

DATA COLLECION PROCEDURE

The data for the main study was collected from 8.6.2015 to 30.6.2015. The samples were selected from KanchiKamaKoti Childs Trust Hospital,Chennai. After obtaining permission from the Medical and Nursing Director of KanchiKamakoti Childs Trust Hospital, a total of 100 samples both male and female staff nurses were selected using non probability convenient sampling technique. After a brief introduction, staff nurses who fulfilled the inclusion criteria were selected. Informed consent was obtained from the sample for their willingness to participate in the study. After verification of informed consent form, the data was collected. Structured self administered questionnaire and likert scale was used to assess the knowledge and attitude. Checklist was used to observe the practice towards prevention of medication error in children. It took approximately two hours to collect data from each sample.

PLAN FOR DATA ANALYSIS

Both descriptive and inferential statistics were used to analyze the data obtained from the samples.

DESCRIPTIVE STATISTICS

- Frequency and percentage distribution was used to describe demographic data.
- Frequency and percentage distribution was used to assess the knowledge, attitude and practice towards prevention of medication error in children.
- Mean and Standard Deviation was used to compare the knowledge, attitude and practice of staff nurses towards prevention of medication error in children.

INFERENTIAL STATISTICS

- Coefficient of correlation was used to correlate the knowledge, attitude and practice of staff nurses towards prevention of medication error in children.
- Chi-square ($\chi 2$) was used to associate the knowledge, attitude and practices of staff nurses towards prevention of medication error in children with demographic variables.
- ANOVA was used to compare the knowledge, attitude and practices of staff nurses towards preventionof medication error in children.

CHAPTER –IV

DATA ANALYSIS AND INTERPRETATION

Data analysis and interpretation is the core step in research process. The importance of analysis and interpretation of the collected data is to systematically organize, classify and summarize it, so that the results can be interpreted and comprehended to give all the answers that triggered the research. In this chapter, a detailed analysis of the collected data has been done as per the objectives stated earlier. The data obtained were classified and is presented under the following sections:

SECTION- A:

Frequency and percentage distribution of the demographic variables of staff nurses towards prevention of medication error in children.

SECTION- B

Frequency and percentage distribution of knowledge, attitude and practice of staff nurses towards prevention of medication error in children.

SECTION- C:

Comparison of knowledge, attitude and practice of staff nurses towards prevention of medication error in children.

SECTION- D:

Correlation of knowledge, attitude and practice of staff nurses towards prevention of medication error in children.

SECTION- E:

Association of knowledge, attitude and practice of staff nurses towards prevention of medication error in children with demographic variables of staff nurses.

SECTION-A

FREQUENCY AND PERCENTAGE DISTRIBUTION OF DEMOGRAPHIC VARIABLES OF STAFF NURSES TOWARDS PREVENTION OF MEDICATION ERROR IN CHILDREN.

Table1.1:Frequency and percentage distribution of demographic variables of staff nurses based on age, gender, educational status, total years of experience, and total years of experience in paediatric ward. N=100

S.No	Demographic variables	Frequency	Percentage (%)
1	Age		
	a)20-30 years	86	86
	b)30-40 years	12	12
	c)40-50 years	02	02
	d)50 years and above	00	00
2	Gender		
	a)Male	04	04
	b)Female	96	96
3	Educational status		
	a)D.G.N.M.	57	57
	b)B.Sc. Nursing	40	40
	c)P.B.B.Sc. Nursing	02	02
	d)M.Sc. Nursing	01	01
4	Total years of experience as staff nurse		
	a)Less than one year	06	06
	b)1-5 years	73	73
	c)6-10 years	15	15
	d)11years and above	06	06
5.	Total years of experience in paediatric unit/ward		
	a)Less than 1year	07	07
	b)1-3 years	49	49
	c)4-6 years	30	30
	d)7 years and above	14	14

Table: 1.1shows that majority (86%) of the staff nurses belonged to 20-30 years and 96% of the staff nurses were female. Majority (57%) of the staff nurses completed Diploma in General Nursing and Midwifery and 40% of the staff nurses completed B.Sc.Nursing. Regarding total years of experience, majority (73%) of the staff nurses had 1-5 years of experience whereas 49% of the staff nurses had 1-3 years of experience in paediatric unit/ward.

Table1.2: Frequency and percentage distribution of demographic variables of staff nurses based on maximum working experience, current working area, and commission of medication error.

N=100

S.No	Demographic variables	Frequency	Percentage(%)
6.	The maximum working experience is in		
	a)Paediatric medical wards	27	27
	b) Paediatric surgical wards	19	19
	c)Paediatric Intensive cares	48	48
	d)Paediatricoutpatient departments/E.M.R	06	06
7.	Currently working in		
	a)Paediatric medical wards	32	32
	b)Paediatric surgical wards	25	25
	c)Paediatric Intensive cares	39	39
	d)Paediatricoutpatient departments/E.M.R	04	04
8.	Have you ever committed medication error?		
	a)Yes	04	04
	b)No	96	96
	If yes, what did you do		
	a)Not reveal to anyone	0	00
	b) Reported to senior staff nurses	4	100
	c) Informed and convinced parents	0	00
	d) Any others	0	00

Table:1.2.shows that 48% of the staff nurses had maximum work experience in paediatric intensive care units and 39% of the staff nurses are currently working in paediatric intensive care units. Four percentage of staff nurses committed medication error and they had reported to senior staff nurses.

SECTION- B

FREQUENCY AND PERCENTAGE DISTRIBUTION OF KNOWLEDGE, ATTITUDE AND PRACTICE OF STAFFNURSES TOWARDS PREVENTION OF MEDICATION ERROR IN CHILDREN.

Table: 2.1Frequency and percentage distribution of level of knowledge of staff nurses towards prevention of medication error in children.

N=100

S.NO	LEVEL OF KNOWLEDGE	FREQUENCY	PERCENTAGE (%)
1.	Adequate knowledge	47	47
2.	Moderately adequate knowledge	53	53
3.	Inadequate knowledge	00	00

Table: 2.1 shows that majority (53%) of the staff nurses had moderately adequate knowledge and 47% of the staff nurses had adequate knowledge towards prevention of medication error in children.

Table: 2.2Frequency and percentage distribution of level of attitude of staff nurses towards prevention of medication error in children. **N=100**

S.NO.	LEVEL OF ATTITUDE	FREQUENCY	PERCENTAGE (%)
1.	Favorable attitude	62	62
2.	Moderate attitude	38	38
3.	Un favorable attitude	00	00

Table: 2.2 shows that majority (62%) of the staff nurses had favorable attitude and 38% of the staff nurses had moderate attitude towards prevention of medication error in children.

Table2.3Frequency and percentage distribution of level of practice of staff nurses towards prevention of medication error in children.

N=100

S.NO	LEVEL OF PRACTICE	FREQUENCY	PERCENTAGE(%)
1.	Good practice	69	69
2.	Moderate practice	31	31
3.	Poor practice	00	00

Table: 2.3 shows that majority (69%) of the staff nurses had good practice and 31% of the staff nurses had moderate practice towards prevention of medication error in children.

SECTION- C

COMPARISONOF KNOWLEDGE, ATTITUDE AND PRACTICE OF STAFF NURSES TOWARDS PREVENTION OF MEDICATION ERROR IN CHILDREN.

Table 3.1: Comparison of Mean and Standard Deviation scores of knowledge, attitude and practice of staff nurses towards prevention of medication error in children. N=100

S.NO.	VARIABLES	MEAN	SD
1.	Knowledge	77.2	1.76
2.	Attitude	81.0	4.43
3.	Practice	85.2	2.33

Table3.1 shows that the staff nurses mean knowledge score is 77.2with the standard deviation of 1.76. The mean attitude score is 81.0 with the standard deviation of 4.43 and the mean practice is 85.2with the standard deviation of 2.33.The staff nurses had high mean practice score of 85.2 with the standard deviation of 2.33 when compared with knowledge (Mean-77.2;SD1.76) and attitude (Mean- 81.0,SD 4.43).

Table 3.2: Comparison of knowledge, attitude and practice of staff nurses towards prevention of medication error in children.

N=100

SOURCEOFVARIATION	SS	DF	MS	'F' ratio
Between sample	13576.860	2	67878.430	7110.096 P=0.001***
Within sample	2835.390	297	9.457	

Table3.2: shows that there is a significant difference between knowledge, attitude and practice of the staff nurses towards prevention of medication error in children at 0.05% level of significance.

SECTION- D

CORRELATION OF KNOWLEDGE, ATTITUDE AND PRACTICE OF STAFF NURSES TOWARDS PREVENTION OF MEDICATION ERROR IN CHILDREN

Table 4.1 Correlation of knowledge, attitude and practice of staff nurses towards prevention of medication error in children. N=100

VARIABLES	'r' Value	P value
Knowledge Vs Attitude	0.56	p=0.001***
Knowledge Vs Practice	0.58	P= 0.001***
Attitude Vs Practice	0.48	p=0.001***

*** Denotes very high significant at 1% level (P≤0.001).

Table 4.1 shows that there is a positive, significant and moderate correlation between knowledge, attitude and practice of the staff nurses towards prevention of medication error in children at 1% level of significance.

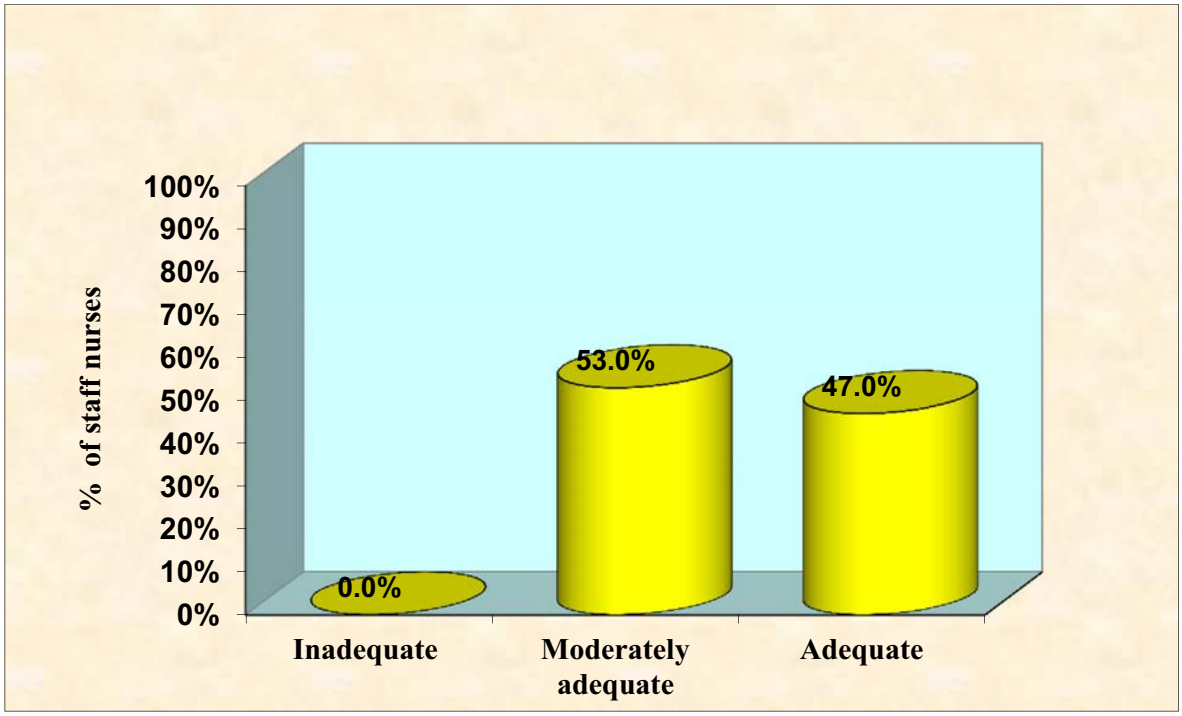

Figure 3: Frequency and percentage distribution of level of knowledge of staff the nurses towards prevention of medication error in children.

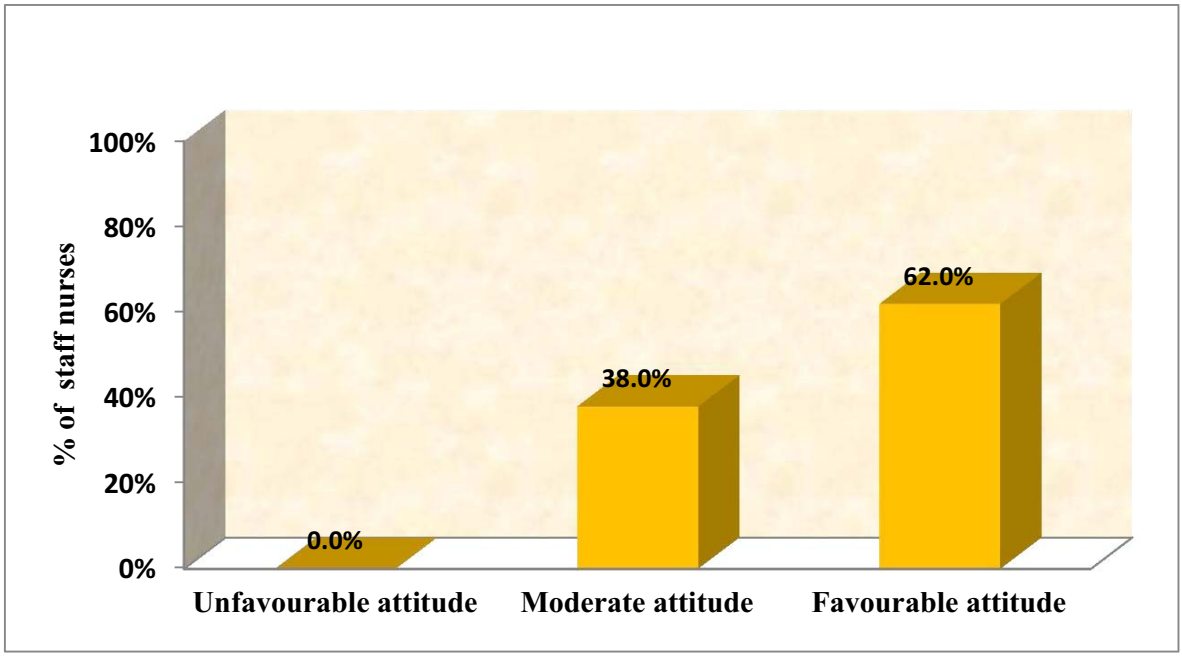

Figure4: Frequency and percentage distribution of level of attitude of the staff nurses towards prevention of medication error in children.

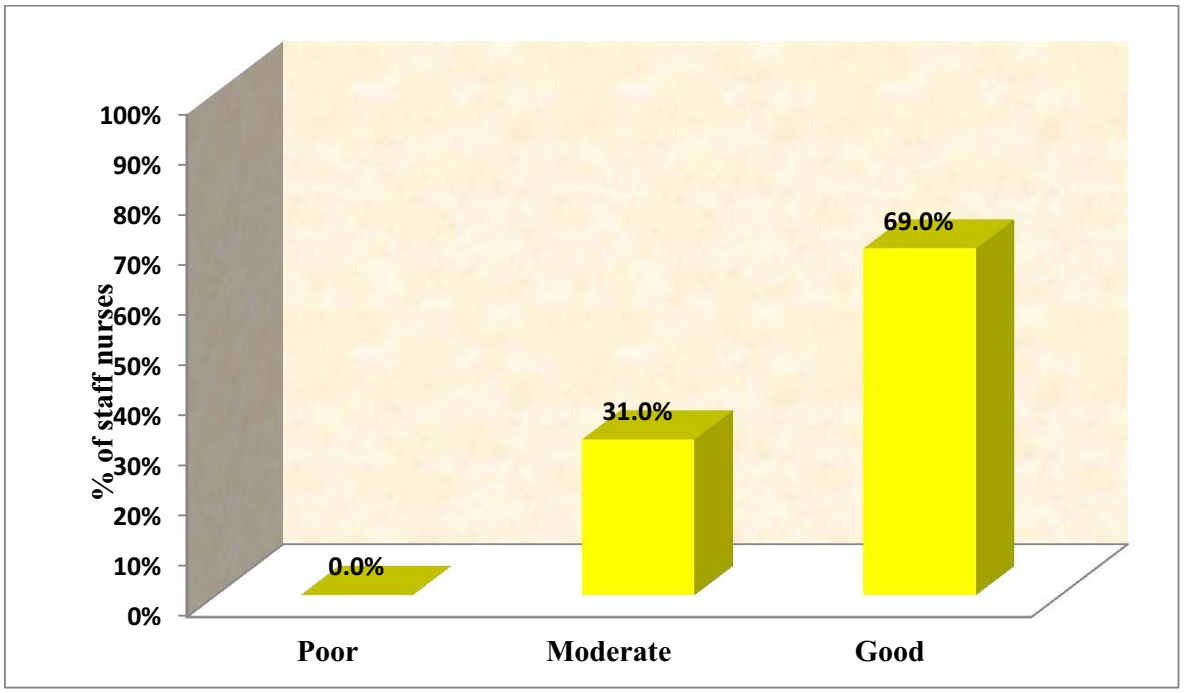

Figure 5: Frequency and percentage distribution of level of practice of the staff nurses towards prevention of medication error in children.

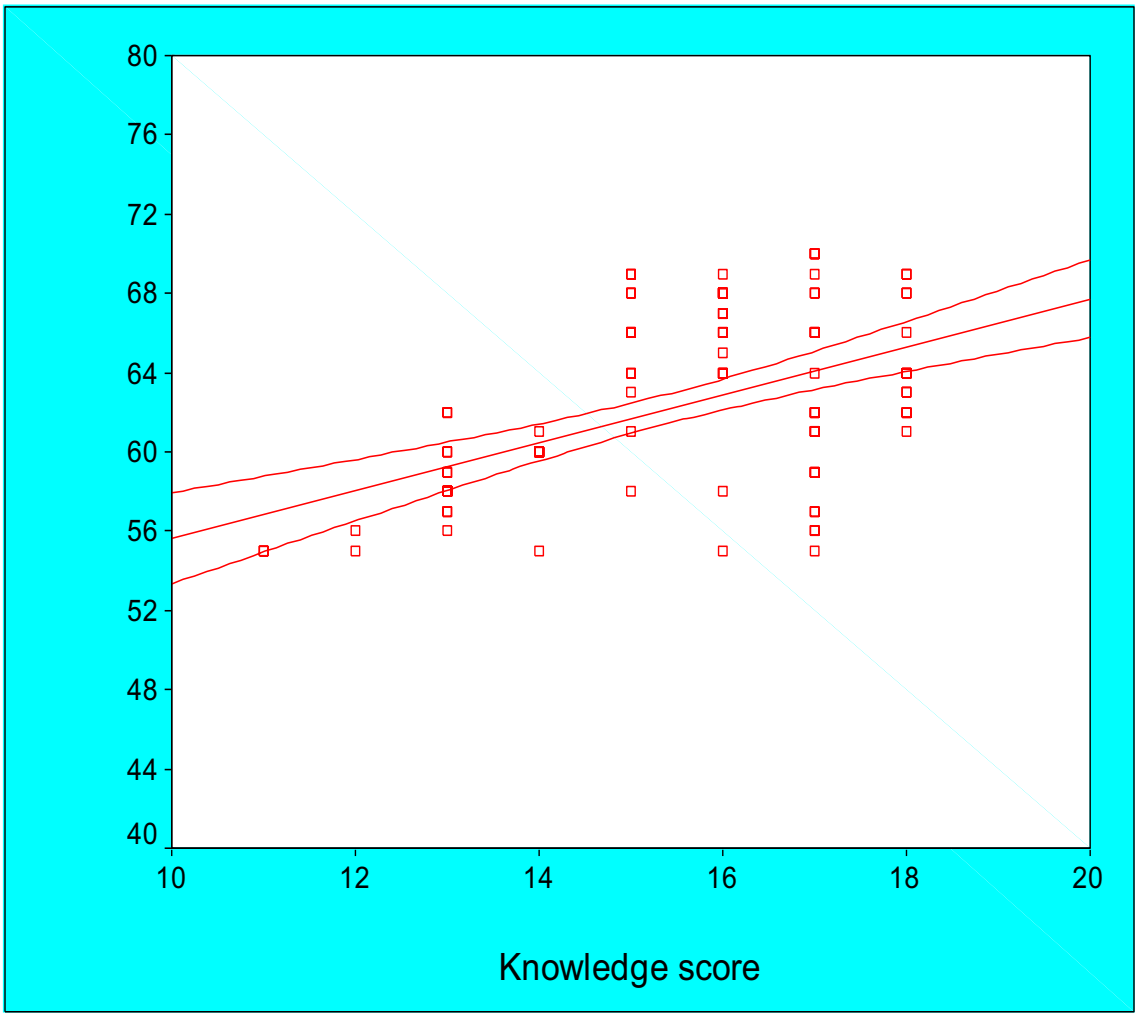

Figure 6: Correlation between knowledge and attitude of the staff nurses towards prevention of medication error in children.

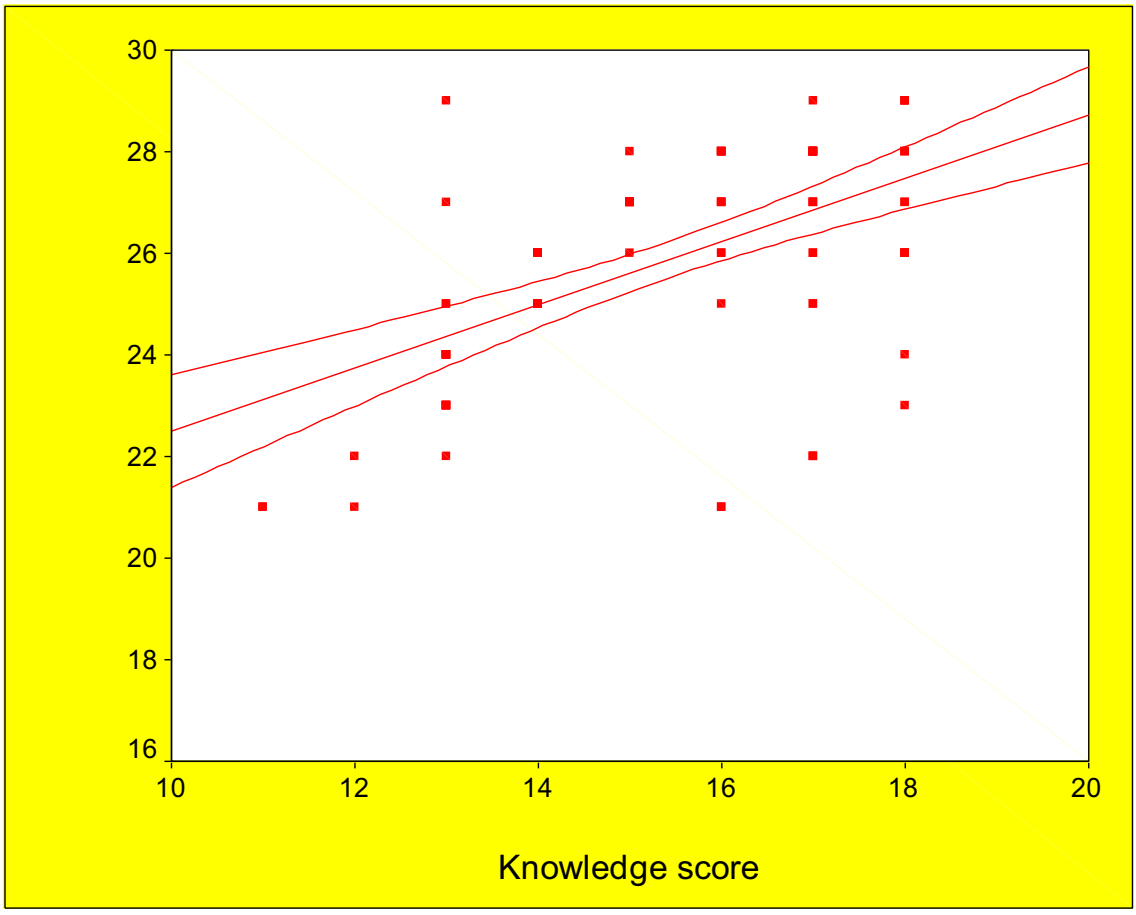

Figure 7: Correlation between knowledge and practice of the staff nurses towards prevention of medication error in children

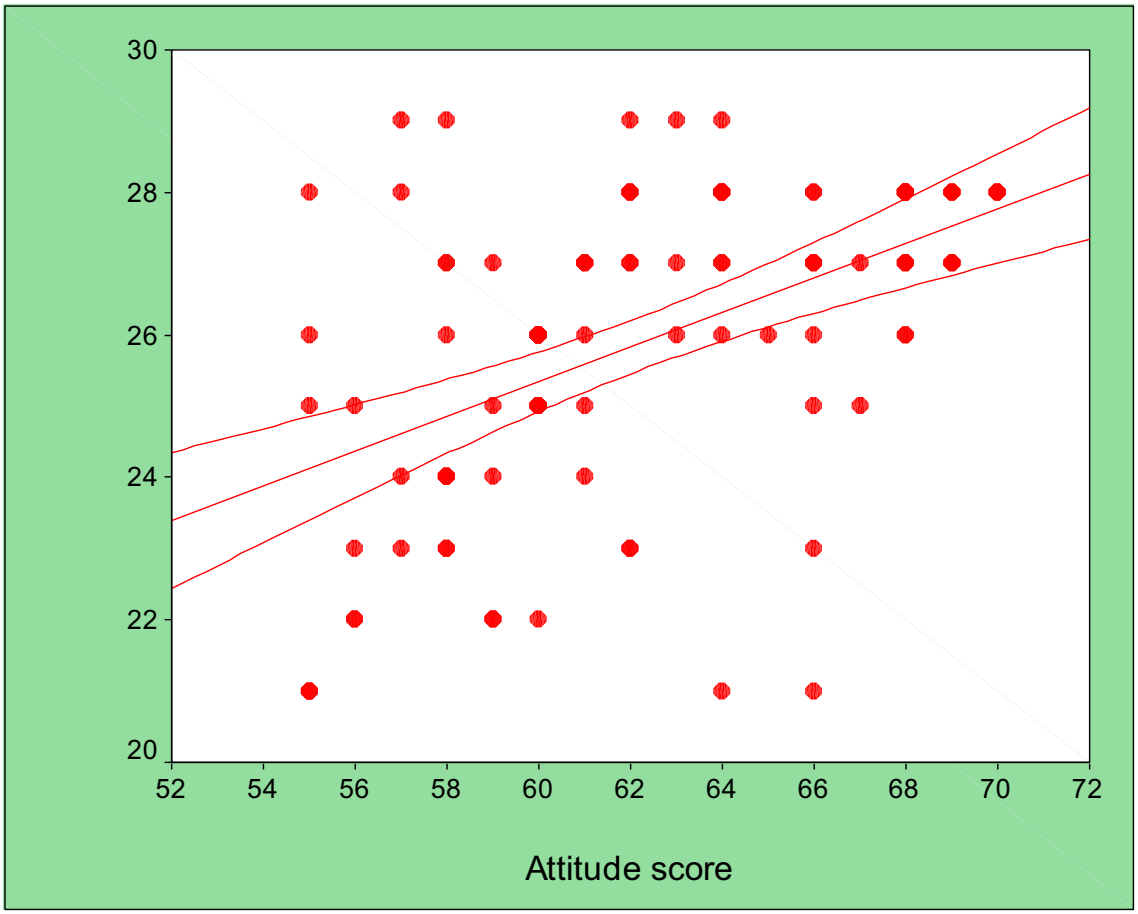

Figure 8: Correlation between attitude and practice of the staff nurses towards prevention of medication error in children.

SECTION-E

ASSOCIATION OF KNOWLEDGE, ATTITUDEAND PRACTICE OF STAFF NURSES TOWARDS PREVENTION OF MEDICATION ERROR IN CHILDREN WITH DEMOGRAPHIC VARIABLES OF STAFF NURSES.

Table: 5.1Association between level of knowledge towards prevention of medication error in children and demographic variables of staff nurses.

N=100

S.No	Demographic variables	Level of knowledge				Total	Chi square value
		Moderately adequate		Adequate			
		F	%	F	%		
1	Age						
	a)20-30 years	50	58.1	36	41.9	86	6.94
	b)30-40 years	03	25.0	09	75.0	12	P=0.03*
	c)40-50 years	00	0.00	02	100	02	S
	d)50 years and above	00	0.00	00	00	00	
2	Gender						
	a)Male	02	50.0	02	50.0	04	0.02
	b)Female	51	53.1	45	46.9	96	P=0.90
							NS
3	Educational status						
	a)D.G.N.M	28	50.0	28	50.0	56	1.65
	b)B.Sc. Nursing	23	57 .5	17	42.5	41	P=0.65
	c)P.B.B.Sc.Nursing	01	50.0	01	50.0	02	NS
	d)M.Sc. Nursing	00	00.0	01	100.0	01	
4	Total years of experience as staff nurse						
	a)Less than one year	04	66.7	02	33.3	06	9.35
	b)1-5 years	44	60.3	29	39.7	73	P=0.02*
	c)6-10 years	04	26.7	11	73.3	15	S
	d)11years and above	01	16.7	05	83.3	06	

S-significant.(*significance at 5% level)NS-Non significant.

Table: 5.1 shows that there is a significant association between level of knowledge towards prevention of medication error and demographic variables such as age and total years of experience as staff nurse. There is no significant association between gender and educational status.

Table: 5.2Association between level of knowledge towards prevention of medication error in children and demographic variables of staff nurses.

N=100

S.No	Demographic variables	Level of knowledge				Total	Chi square value
		Moderately adequate		Adequate			
		F	%	F	%		
5	Total years of experience in paediatric unit/ward						
	a)Less than 1year	05	71.4	02	28.6	07	12.64
	b)1-3 years	33	67.3	16	32.7	49	P=0.03*
	c)4-6 years	12	40.0	18	60.0	30	S
	d)7 years and above	03	21.4	11	78.6	14	
6	The maximum working experience is in						
	a)Paediatric medical wards	16	59.3	11	40.7	27	1.43
	b)Paediatric surgical wards	10	52.6	09	47.4	19	P=0.71
	c)Paediatric intensive cares	23	47.9	25	52.1	48	NS
	d)Paediatric outpatient departments/E.M.R	04	66.7	02	33.3	06	
7	Currently working in						
	a)Paediatric medical wards	17	53.1	15	46.9	32	0.83
	b) Paediatric surgical wards	13	52.0	12	48.0	25	P=0.84
	c)Paediatric Intensive cares	20	51.3	19	48.7	39	NS
	d)Paediatricoutpatient departments/E.M.R	03	75.0	01	25.0	04	
8	Have you ever committed medication error?						1.31
	a)Yes	01	25.0	03	75.0	04.0	P=0.25
	b)No	52	55.3	44	44.7	96.0	NS

S-significant. (* significance at 5% level)NS-Non significant.

Table: 5.2 shows that there is a significant association between level of knowledge towards prevention of medication error and total years of experience of staff nurses in paediatric unit/ward. There is no significant association between the level of knowledge with other variables such as the maximum working experience in each paediatric unit, current working status and commission of medication error.

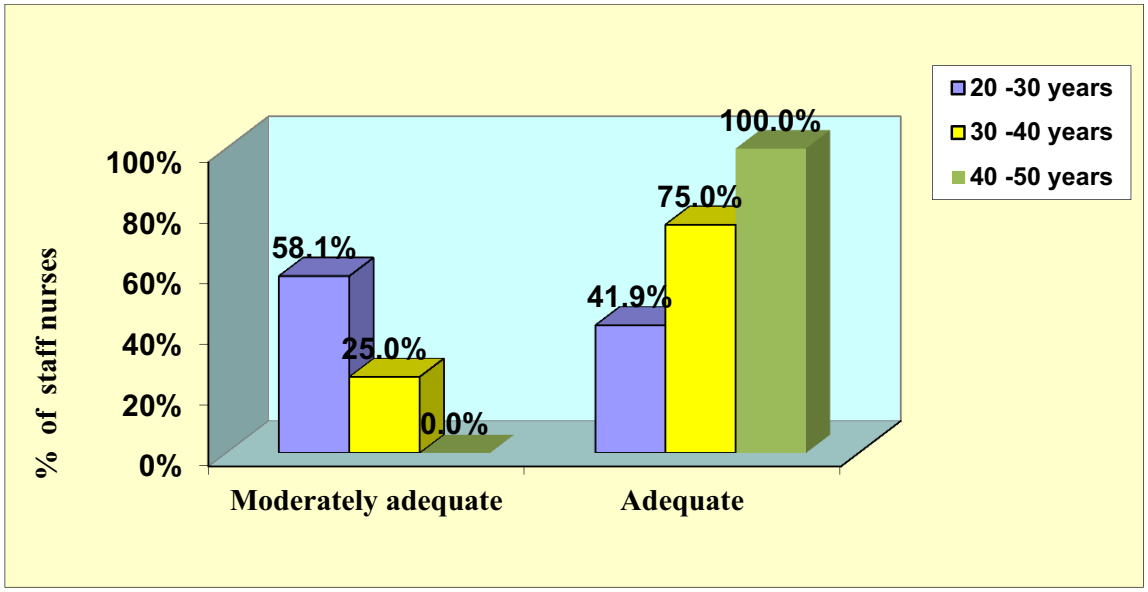

Figure9: Association between level of knowledge and age of staff nurses

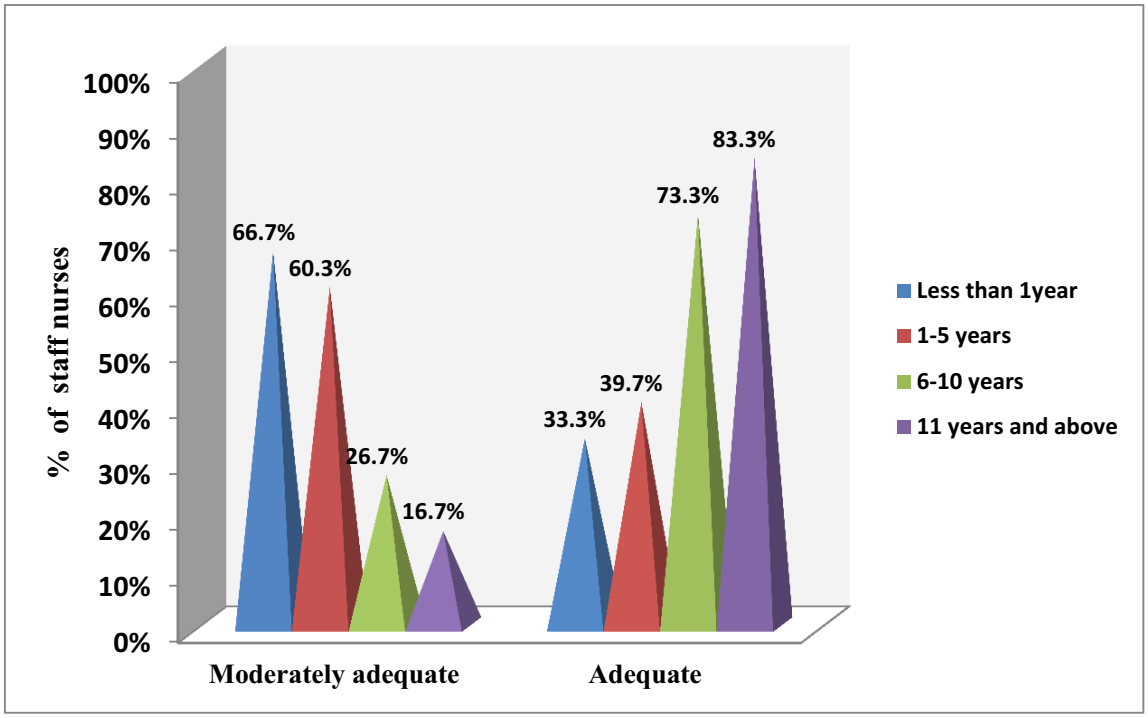

Figure 10: Association between level of knowledge and experience of staff nurses

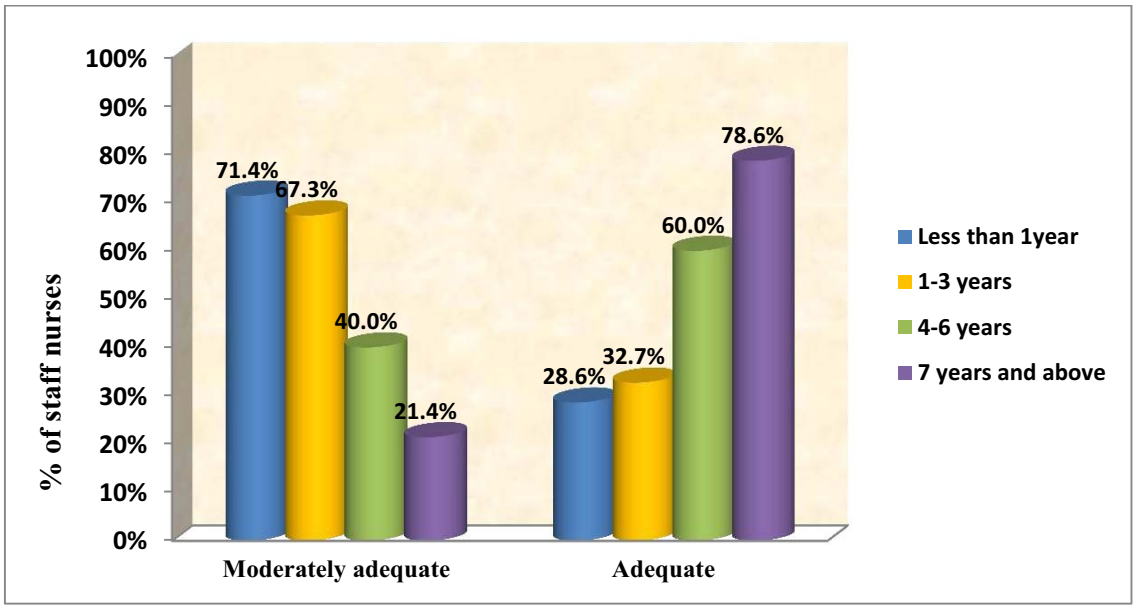

Figure 11: Association between level of knowledge and experience of staff nurses in paediatric ward.

Table: 5.3 Association between level of attitude towards prevention of medication error in children and demographic variables of staff nurses.

N=100

S.No	Demographic variables	Level of attitude				Total	Chi square value
		Moderate attitude		Favourable attitude			
		F	%	F	%		
1	Age						
	a)20-30 years	37	43	49	57.0	86	6.62
	b)30-40 years	01	8.3	11	91.7	12	P=0.04*
	c)40-50 years	00	00	02	100.0	02	S
	d)50 years and above	00	00	00	000.0	00	
2	Gender						
	a)Male	03	75.0	01	25.0	04	2.42
	b)Female	35	36.5	61	63.5	96	P=0.12
							NS
3	Educational status						
	a)D.G.N.M.	28	50	28	50	56	8.09
	b)B.Sc. Nursing	11	25	30	75	40	P=0.04*
	c)P.B.B.Sc. Nursing	00	00	02	100	02	S
	d)M.Sc. Nursing	00	00	01	100	01	
4	Total years of experience as staff nurse						
	a)Less than one year	05	83.3	01	16.7	06	8.54
	b)1-5 years	29	39.7	45	60.3	73	P=0.04*
	c)6-10 years	03	20.0	12	80.0	15	S
	d)11years and above	01	16.7	05	83.3	06	

S-significant.(*significance at 5% level)NS-Non significant.

Table: 5.3 shows that there is a significant association between level of attitude towards prevention of medication error and demographic variables such as age, educational status and total years of experience of staff nurses.

Table: 5.4 Association between level of attitude towards prevention of medication error in children and demographic variables of staff nurses.

N=100

S .No	Demographic variables	Level of attitude				Total	Chi square value
		Moderate attitude		Favourable attitude			
		F	%	F	%		
5	Total years of experience in paediatric unit/ward						
	a)Less than 1year	04	57.1	03	42.9	07	1.47
	b)1-3 years	17	34.7	32	65.3	49	P=0.68
	c)4-6 years	11	36.7	19	63.3	30	NS
	d)7 years and above	06	42.9	08	57.1	14	
6	The maximum working experience is in						
	a)Paediatric medical wards	09	33.3	18	66.7	27	0.75
	b)Paediatric surgical wards	08	42.1	11	57.9	19	P=0.86
	c)Paediatric intensive cares	18	37.5	30	62.5	48	NS
	d)Paediatricoutpatient departments/E.M.R	03	50.0	03	50.0	06	
7	Currently working in						
	a)Paediatric medical wards	11	34.4	21	65.6	32	0.46
	b)Paediatric medical wards	10	40.0	15	60.0	25	P=0.92
	c)PaediatricIntensive cares	15	38.5	24	61.5	39	NS
	d)Paediatricoutpatient departments/E.M.R	02	50.0	02	50.0	04	
8	Have you ever committed medication error?						0.30
	a)Yes	01	25.0	03	75.0	04	P=0.58
	b)No	37	38.5	59	61.5	96	NS

S-significant. (*significance at 5% level) NS-Non significant.

Table: 5.4 shows that there is no significant association between level of attitude towards prevention of medication error and demographic variables such as total years of experience in paediatric unit/ward, the maximum working experience in paediatric unit, current working status and commission of medication error.

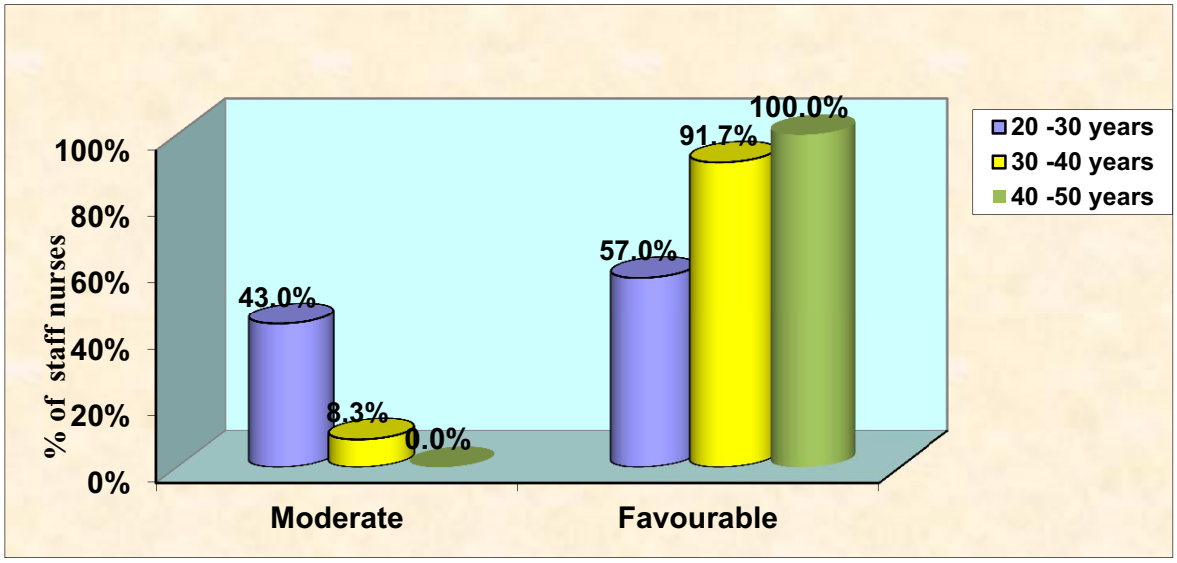

Figure12: Association between level of attitude and age of staff nurses.

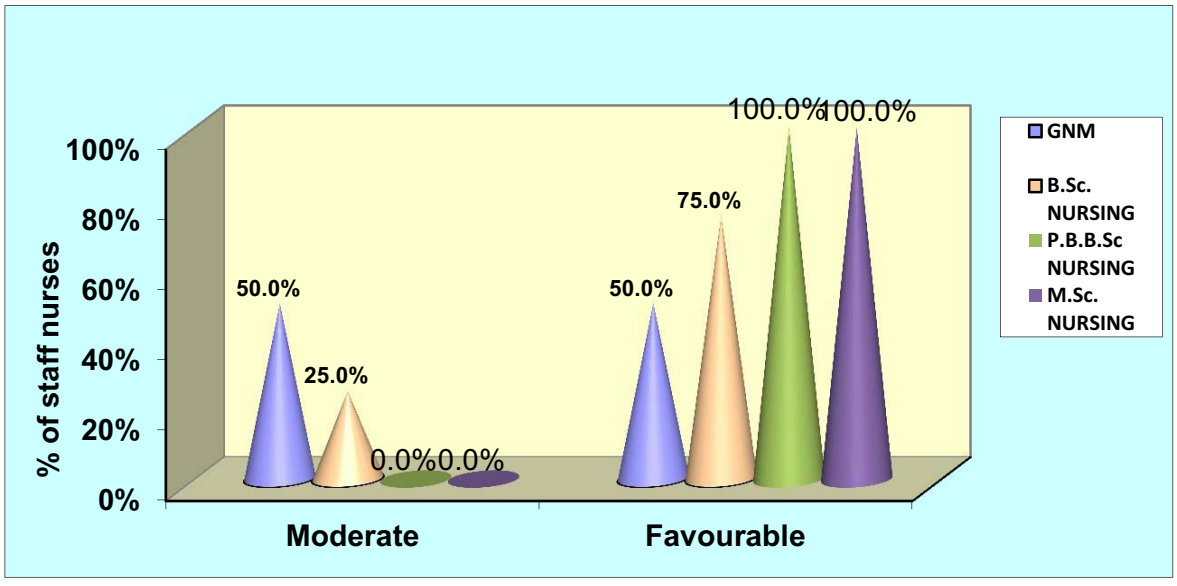

Figure13: Association between level of attitude and education status of staff nurses.

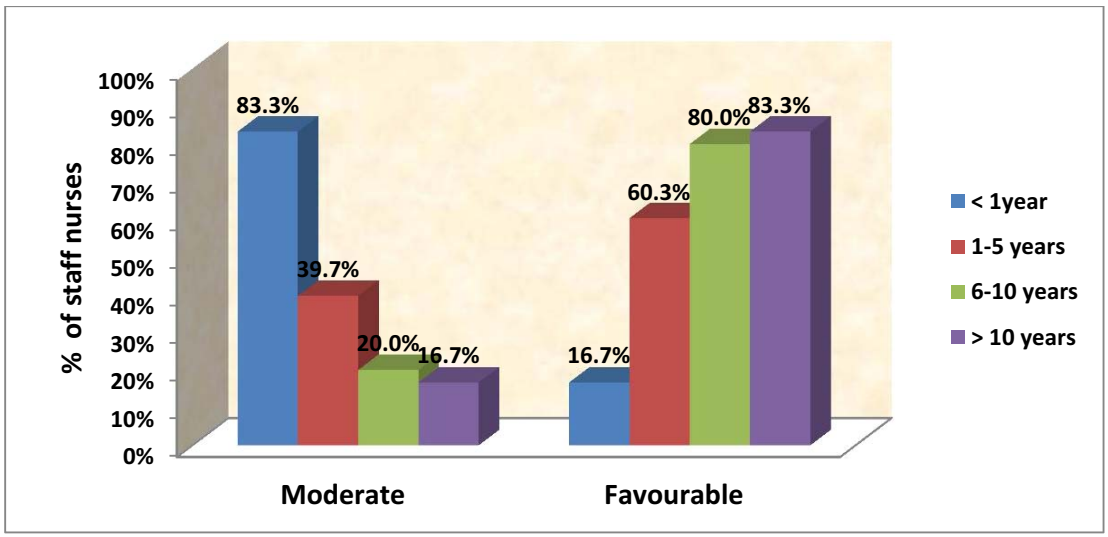

Figure 14:Association between level of attitude and experience of staff nurses.

Table: 5.5Association between level of practice towards prevention of medication error in children and demographic variables of staff nurses.

N=100

S. No	Demographic variables	Level of practice				Total	Chi square value
		Moderate practice		Good practice			
		F	%	F	%		
1	Age						
	a)20-30 years	29	33.7	57	66.3	86	2.34
	b)30-40 years	02	16.7	10	83.3	12	P=0.30
	c)40-50 years	00	0.00	02	100.0	02	NS
	d)50 years and above	00	0.00	00	00.0	00	
2	Gender						
	a)Male	00	00.0	04	100	04	1.87
	b)Female	31	32.3	65	67.7	96	P=0.17
							NS
3	Educational status						
	a)D.G.N.M.	24	42.8	33	57.2	57	8.04
	b)B.Sc. Nursing	07	17.5	33	82.5	40	P=0.05*
	c)P.B.B.Sc.Nursing	00	00.0	02	100.0	02	S
	d)M.Sc. Nursing	00	00.0	01	100.0	01	
4	Total years of experience as staff nurse						
	a)Less than one year	04	66.7	02	33.3	06	8.65
	b)1-5 years	25	34.2	48	65.8	73	P=0.03*
	c)6-10 years	01	06.7	14	93.3	15	S
	d)11years and above	01	16.7	05	83.3	06	

S-significant.(*significance at 5% level)NS –non significant.

Table: 5.5shows that there is a significant association between level of practice towards prevention of medication error and demographic variables such as educational status and total years of experience as staff nurse. There is no significant association between level of practice towards prevention of medication error and demographic variables such as age and gender of staff nurse.

Table: 5.6Association between level of practice towards prevention of medication error in children and demographic variables of staff nurses.

N=100

S. No	Demographic variables	Level of practice				Total	Chi square value
		Moderately practice		Good practice			
		F	%	F	%		
5	Total years of experience in paediatric unit/ward						
	a)Less than 1year	02	28.6	05	71.4	07	1.07
	b)1-3 years	13	26.5	36	73.5	49	P=0.78
	c)4-6 years	11	36.7	19	63.3	30	NS
	d)7 years and above	05	35.7	09	64.3	14	
6	The maximum working experience is in						
	a)Paediatric medical wards	10	37.0	17	63.0	27	
	b)Paediatric surgical wards	05	26.3	14	73.7	19	2.01
	c)Paediatric intensive cares	13	27.1	35	72.9	48	P=0.57
	d)Paediatricoutpatient departments/E.M.R	03	50.0	03	50.0	06	NS
7	Currently working in						
	a)Paediatric medical wards	09	28.1	23	71.9	32	1.00
	b) Paediatric surgical wards	07	28.0	18	72.0	25	P=0.80
	c)PaediatricIntensive cares	13	33.3	26	66.7	39	NS
	d)Paediatricoutpatient departments/E.M.R	02	50.0	02	50.0	04	
8	Have you ever committed medication error?						0.17
	a)Yes	02	50.0	02	50.0	04	P=0.67
	b)No	28	30.2	67	69.8	96	NS

S-significant.(*significance at 5% level)NS –non significant.

Table: 5.6 shows that there is no significant association between level of practice towards prevention of medication error and demographic variables such as total years of experience in paediatric unit/ward, the maximum working experience in each paediatric unit, current working status and commission of medication error.

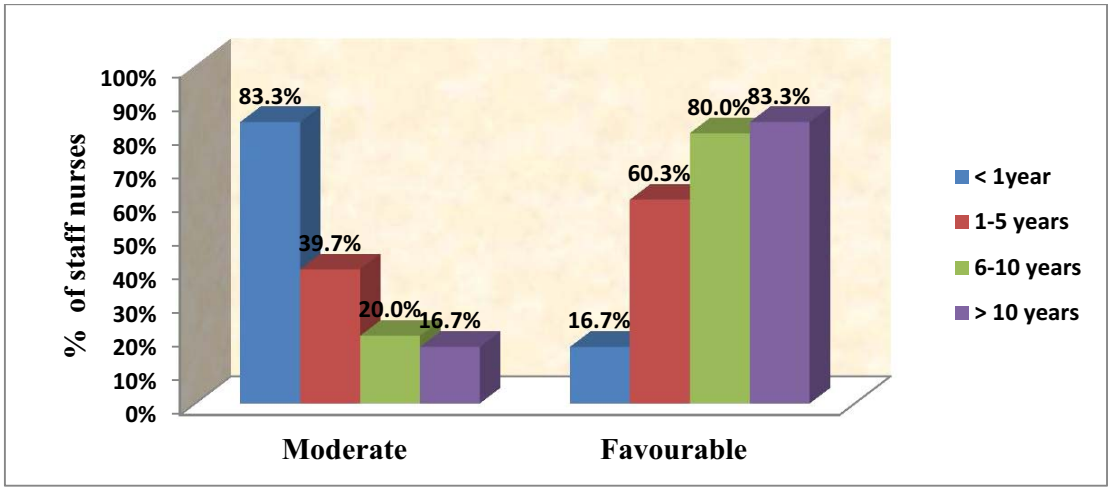

Figure15: Association between level of practice and education status of staff nurses.

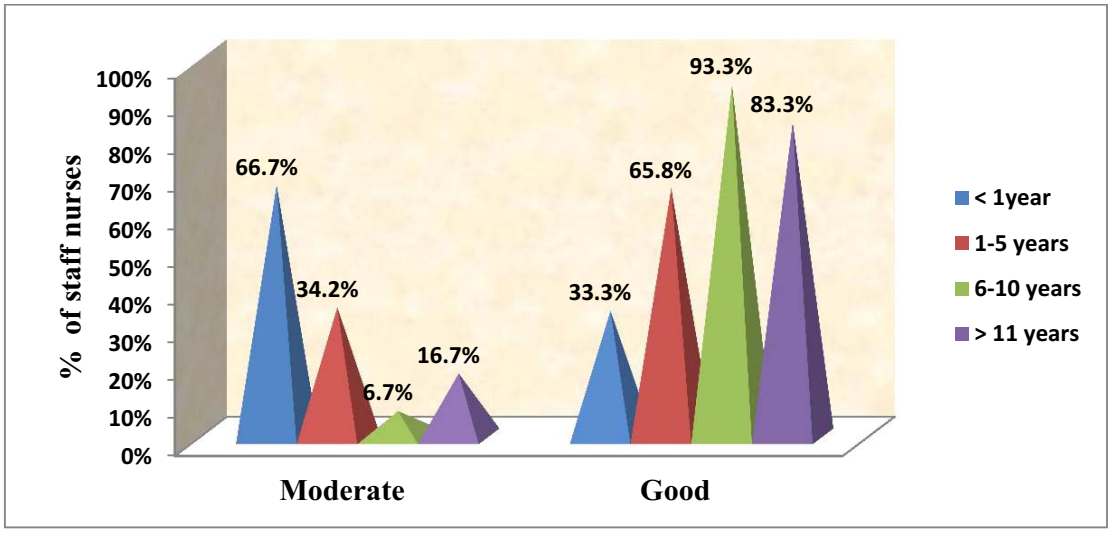

Figure16: Association between level of practice and experiences of staff nurses.

CHAPTER - V

DISCUSSION

This present study was intended to assess the knowledge, attitude and practice towards prevention of medication error in children among staff nurses working at selected settings in Chennai.

A total of hundred staff nurses were selected by non-probability convenient sampling technique. The data was analyzed and presented in the form of tables and diagrams. The findings of the present study were discussed based on the objectives.

Description of sample characteristics:

- Majority (86%) of the staff nurses belonged to 20-30 years.
- Majority (96%) of the staff nurses were female.
- Fifty seven percentage of the staff nurses completed D.G.N.M. and 40% of them completed B.Sc.(N).
- Regarding total years of experience, majority (73%) of the staff nurses had 1-5 years of experience.
- Forty nine percentage of the staff nurses had 1-3 years of experience in paediatric unit/ward.
- Majority (48%) of the staff nurses had maximum work experience in paediatric intensive care units.
- Thirty nine percentage of the staff nurses are currently working in paediatric intensive care units.
- Four percentage of the staff nurses committed medication error and they had reported to senior staff nurses.

The findings of the study as per objectives are:

1. **To assess the knowledge, attitude and practice of the staff nurses towards prevention of medication error in children.**

Table: 2.1 showed that majority (53%) of the staff nurses had moderately adequate knowledge and 47% of the staff nurses had adequate knowledge towards prevention of medication error in children. The study result showed that the overall mean knowledge score was 77.2%. This result was supported by Anupriya,P. (2010) who reported that (50%) of the staff nurses had adequate knowledge about prevention of medication error in children.

Numerous studies have indicated medication errors to be the result of lack of in-service training and inadequate knowledge of nursing graduates. Many researchers have recommended that increasing pharmacological knowledge of the staff nurses as a strategy to reduce medication error. Therefore, nurses are required to update their knowledge about medicine especially new drugs.

Table: 2.2 showed that majority (62%) of the staff nurses had favorable attitude and 38% of the staff nurses had moderate attitude towards prevention of medication error in children. Majority of the nurses (92.6%) strongly agreed with the fact that they need to update their knowledge on pharmacology and they could explain in detail the medication and its dosages clearly to the patients and care givers. About 80.4 % of the nurses wished to notify the prescriber when an error occurred. Majority of the nurses (84%) agreed that nurses need to check rights related to medication administration in order to prevent medication errors. This findings were in correspondence with Abusaad,S.F. &Etawy,A.E.(2015) who reported that, 65.49% of the staff nurses had favourable attitude towards prevention of medication error in children.

The attitude that matters in the safe administration of medication, even though all nurses agreed that updating of knowledge on medication is important for prevention of medication error. Thus the nurses should have a favourable and positive attitude towards safe administration of medication.

Table 2.3 showed that majority (69%) of the staff nurses had good practice and 31% of the staff nurses had moderate practice towards prevention of medication error in children. The study result showed that the overall mean practice score was 85.2%.

Despite the result of the study which showed that 53% of the nurses had moderate knowledge and 38% of the staff nurses had moderate attitude towards prevention of medication error, still it is observed that 85.2% of the staff nurses had good practice towards prevention of medication error.

From the study findings, it shows that the knowledge, attitude and practice towards prevention of medication error varies among staff nurses. Hence, the assumption stated that the knowledge, attitude and practice towards prevention of medication error will vary is supported by this study findings.

2. To compare knowledge, attitude and practice of staff nurses towards prevention of medication error in children.

Table3.1 showed that the staff nurses mean knowledge score was 77.2 with the standard deviation of 1.76. The mean attitude score was 81.0 with the standard deviation of 4.43 and the mean practice score was 85.2 with the standard deviation of2.33. The staff nurses had high mean practice score of 85.2 with the standard deviation of 2.33 when compared with knowledge (Mean-77.2; SD-1.76) and attitude (Mean-81; SD-4.43).

In this study the minimum knowledge score was 71% and maximum score was 81.3%. In attitude minimum score was 66% and maximum score was 95%. Regarding practice, minimum score was 73% and maximum score was 85.2%.

This findings of the study was supported by the Elbahnasawy, H. et al.(2012) who reported that the staff nurses mean knowledge score was 74.3 with the standard deviation of 2.76. The mean attitude score was 78.0 with the standard deviation of 2.03 and the mean practice score was 80.2 with the standard deviation of 1.53. The staff nurses had high mean practice score of 80.2 with the standard deviation of 1.53 towards prevention of medication error in children.

Table3.2 showed that there was a statistically significant difference between knowledge, attitude and practice of staff nurses towards prevention of medication error in children at 0.05% level of significance. This findings of the study was supported by Elbahnasawy, H. et al.(2012) who reported that the there was a significant difference between knowledge, attitude and practice of staff nurses towards prevention of medication error in children.

Hence, the hypothesis stated that, there is no significant difference between knowledge, attitude and practice of staff nurses towards prevention of medication error in children is rejected.

3. **To correlate the knowledge, attitude and practice of staff nurses towards prevention of medication error in children.**

Table 4.1 showed that there was a correlation between knowledge Vs practice (r= 0.58), attitudes practice (r=0.48) and knowledge Vs attitude(r=0.56). There was a positive, significant and moderate correlation between knowledge, attitude and practice

of the staff nurses towards prevention of medication error in children at 1% level of significance.

The findings of the study was supported by Elbahnasawy, H. et al.(2012) who reported that there was a significant, positive, moderate correlation between knowledge attitude and practice of staff nurses towards prevention of medication error in children.

Therefore from the above discussion, we can infer that there is a significant correlation between knowledge, attitude and practice of staff nurses. One can influence the other.

4. **To associate knowledge, attitude and practice of staff nurses towards prevention of medication error in children with demographic variables of staff nurses.**

Table: 5.1 showed that there was a statistically significant association between level of knowledge towards prevention of medication error in children and demographic variables such as age and total years of experience as staff nurse at 5% level of significance.

This result was supported by Hajebi, et al. (2010) who reported that staff nurses with more years of experience had adequate knowledge towards prevention of medication error in children.

Table: 5.2 showed that there was a statistically significant association between level of knowledge towards prevention of medication error in children and total years of experience in paediatric unit/ward at 5% level of significance.

This result was supported by Anupriya,P.(2010) who reported that staff nurses who worked in pediatric units with more years of experience had adequate knowledge towards prevention of medication error in children.

Table: 5.3 showed that there was a statistically significant association between level of attitude towards prevention of medication error in children and demographic variables such as age, educational status and total years of experience as staff nurse at 5% level of significance.

The findings of the study was supported by Torkamandi,S.H.et al.(2010) who reported that graduate staff nurses with more years of experience had favourable attitude towards prevention of medication error in children.

Table: 5.5showed that there was a statistically significant association between level of practice towards prevention of medication error and demographic variables such as educational status and total years of experience as staff nurse at 5% level of significance.

The findings of the study was supported by Essani, et al. (2011) who reported that staff nurses who had more than two years of experience had not committed any medication error.

Hence, the hypothesis stated that there is no association between the experience of staff nurses and knowledge, attitude and practice of staff nurses towards prevention of medication error in children is rejected.

The study findings support the assumption that the knowledge, attitude and practice of staff nurses towards prevention of medication error will be influenced by their age and qualification.

CHAPTER –VI

SUMMARY, CONCLUSION, IMPLICATION AND RECOMMENDATION

SUMMARY

The objective of the study was to assess the knowledge, attitude and practice towards prevention of medication error in children among staff nurses working at selected settings in Chennai.

A descriptive research design was chosen to assess the knowledge, attitude and practice towards prevention of medication error in children among staff nurses. The review of literature provided the base and in depth knowledge for the development of the tool. The content validity of the tool on prevention of medication error in children was obtained from the experts and pilot study was conducted.

The study was conducted in Kanchi Kamakotti Childs Trust Hospital, Chennai by obtaining prior permission from the head of the institution. The study was conducted among staff nurses who fulfilled the inclusion criteria from the selected settings. A total of hundred samples were selected by using convenient sampling technique. Self-administered questionnaire, likert scale and checklist was used to collect the data. The questionnaire and likert scale was administered and practice was observed by checklist. Instructions on answering the questions were given to the samples.

The major findings of the study were

- Majority (86%) of the staff nurses belonged to 20-30 years.
- Majority (96%) of the staff nurses were female.

- Fifty seven percentage of the staff nurses completed D.G.N.M. and 40% of them completed B.Sc.(N).
- Regarding total years of experience, majority(73%) of the staff nurses had 1-5 years of experience.
- Forty nine percentage of the staff nurses had 1-3 years of experience in paediatric unit/ward.
- Majority (48%) of the staff nurses had maximum work experience in paediatric intensive care units.
- Thirty nine percentage of the staff nurses are currently working in paediatric intensive care units.
- Four percentage of the staff nurses committed medication error and they had reported to senior staff nurses.
- The assessment of level of knowledge towards prevention of medication error in children among staff nurses showed that 53% of them had moderately adequate knowledge and 47% of them had adequate knowledge.
- The assessment of level of attitude towards prevention of medication error in children among staff nurses showed that 38% of them had moderate attitude and 62% of them had favourable attitude.
- The assessment of level of practice towards prevention of medication error in children among staff nurses showed that majority (69%) of the staff nurses had good practice and 31% of the staff nurses had moderate practice towards prevention of medication error in children.
- The staff nurses had high mean practice score of 85.2 with the standard deviation of 2.33 when compared with knowledge (Mean-77.2; SD1.76) and attitude (Mean- 81.0, SD 4.43).

- There was a significant difference between knowledge, attitude and practice of staff nurses prevention of medication error in children at 0.05% level of significance.
- There was a positive, significant and moderate correlation between knowledge Vs attitude(r=0.56), knowledge Vs practice (r= 0.58) and attitude Vs practice (r=0.48) of staff nurses towards prevention of medication error in children at 1% level of significance.
- There was a significant association between level of knowledge towards prevention of medication error in children and demographic variables such as age, total years of experience as staff nurse and total years of experience in paediatric unit/ward at 5% level of significance.
- There was a significant association between level of attitude towards prevention of medication error in children and demographic variables such as age, educational status and total years of experience as staff nurses at 5% level of significance.
- There was a significant association between level of practice towards prevention of medication error in children and demographic variables such as educational status and total years of experience as staff nurses at 5% level of significance.

CONCLUSION

It is possible to eliminate medication errors. However, the nurses play a vital role in reducing and preventing medication error in children. Nurses had adequate knowledge, favorable attitude and good practice towards prevention of medication error in children. This study proved a significant, positive, moderate correlation between knowledge, attitude and practice of staff nurses towards prevention of medication error

in children. There was a statistically significant association between knowledge, attitude and practice of staff nurses towards prevention of medication error in children with age, educational status and total years of experience. It seems that education and experience serves to increase nurse's confidence and overcoming oppression towards safe administration of medication in children.

NURSING IMPLICATIONS

NURSING PRACTICE

- Nurse administrator should prepare need based teaching and learning materials such as modules, protocols and booklets regarding safe administration of medication in children.
- Design safe work environment conducive for patient care delivery and to reduce the occurrence of medication error.
- Encourage the staff nurses to use bar coding system to reduce the medication administration error.
- Encourage continuing education programme for paediatric nurses by using the different educational strategies regarding safe medication administration.
- Develop standard protocol/policy or guidelines regarding medication administration and instruct the pediatric nurses to use it in order to prevent medication error.
- Nurses should report the medication error and adverse drug event.
- Establish structure preceptorship programme in medication administration to support nurses who are newly qualified or less experience in medication administration.

- Establish effective supervision system to reduce the prevalence of medication error.
- Appoint expert/ experienced nurse to improve novice nurses learning and professional development towards safe medication administration.

NURSING EDUCATION

- Conferences, workshops and seminars can be held for nurses to update the knowledge on safe administration of medication in children.
- Performance appraisal should be carried out periodically to evaluate knowledge and competency on safe medication administration practices.
- Clinical demonstration should be conducted regarding safe medication administration and to improve the practical competency level of nurses.

NURSING ADMINISTRATION

- Develop and disseminate the patient safety medication administration guidelines in all hospital setting.
- Nurse administrators can prepare booklets and checklist on safe medication administration in children which can be circulated among staff nurses.
- Nurse administrator should follow multidisciplinary and non-punitive approach in tackling medication errors among staff nurses.
- Medication nurse manager should educate and train the staff nurses to prevent the medication error and promote safe practices.
- Motivate the staff nurses to write the incident report after commission of medication error.

- Nurse administrator can plan, organize and conduct in-service training program and continuing nursing education about safe medication administration.
- Provide self-report logbook for nurses administering medication.
- Nurse administrator should ensure and maintain staffing pattern as per INC Guide Lines.

NURSING RESEARCH

- Nurse researchers can do more studies on prevention of medication error in children.
- Nurse researcher can explore various innovative methods in promoting safe medication practices in children.
- The findings should be disseminated through conferences, seminars and journal publications.
- The results can be utilized for evidenced based nursing practice.

RECOMMENDATIONS

Based on the findings of the present study, the following recommendations are made

- The study can be conducted on a large sample of staff nurses to confirm and to generalize the study findings.
- A study can be conducted to assess the factors influencing the knowledge, attitude and practice of staff nurses towards prevention of medication error in children.

- A retrospective study can be conducted to analyze the prevalence of medications errors committed by the staff nurses.
- A survey can be conducted to find out the causes of medication error in children among staff nurses.
- A comparative study can be conducted to identify the prevalence of medication error in paediatric ward and paediatric intensive care units among staff nurses.
- A comparative study can be conducted to assess the prevalence of medication error in paediatric clinical area and adult area.

LIMITATION

There were no limitations faced by the investigator during the study.

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APPENDICES

Note

To: ND

CC:

From: Medical Director

Date: 19/12/2014

Re: MSc Nursing Project

Please evaluate this project proposal submitted by Ms. E. Ramya. If you agree, I will permit her to carry out her project, since no patients are involved. She must agree to acknowledge KKCTH in any publications.

BR

Dear Sir,

Request to permit this candidate as she agreed for the Organization's conditions.

08.01.2015.

permitted
BR
10/1/15

Medical Director
KANCHI KAMAKOTI CHILDS TRUST HOSPITAL
12 A NAGESWARA ROAD
NUNGAMBAKKAM
CHENNAI-600 034.

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by Ms.Ramya.E, MSc.,(Nursing) Student of M.A.Chidambaram College Of Nursing for the study,**"A study to assess the knowledge, attitude and practice towards prevention of medication error in children among staff nurses working at selected settings in Chennai."** is validated by the undersigned and she can proceed with this tool to conduct the main study.

DATE: 26/12/14.

SIGNATURE

Dr. D. VELMURUGAN, M.D., (Paed)
Consultant Paediatrician & Neonatologist
Reg. No.61028
BILLROTH HOSPITALS LTD.

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by Ms.Ramya.E, MSc.,(Nursing) Student of M.A.Chidambaram College Of Nursing for the study,**"A study to assess the knowledge, attitude and practice towards prevention of medication error in children among staff nurses working at selected settings in Chennai."** is validated by the undersigned and she can proceed with this tool to conduct the main study.

DATE:

RAJALAKSHMI COLLEGE OF NURSING THANDALAM

SIGNATURE

Dr ANITHA RAJENDRABABU, M.Sc (N) Ph.D
PRINCIPAL
RAJALAKSHMI COLLEGE OF NURSING
THANDALAM, CHENNAI-602 105.

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by Ms.Ramya.E, MSc.,(Nursing) Student of M.A.Chidambaram College Of Nursing for the study,"**A study to assess the knowledge, attitude and practice towards prevention of medication error in children among staff nurses working at selected settings in Chennai.**" is validated by the undersigned and she can proceed with this tool to conduct the main study.

DATE: 2/1/15

SIGNATURE

SRI RAMACHANDRA COLLEGE OF NURSING
Sri Ramachandra University
Porur, Chennai - 600 116

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by Ms.Ramya.E,.MSc.,(Nursing) Student of M.A.Chidambaram College Of Nursing for the study,**"A study to assess the knowledge, attitude and practice towards prevention of medication error in children among staff nurses working at selected settings in Chennai."** is validated by the undersigned and she can proceed with this tool to conduct the main study.

DATE: 05.01.15

SIGNATURE

NESA SAGHYA SAGCHI
Professor & HOD of
Child health nsg. dept
Apollo CON
Ayanambakkam
Chennai-95

Apollo College of Nursing
Apollo
Chennai - 600 095

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by Ms.Ramya.E, MSc.,(Nursing) Student of M.A.Chidambaram College Of Nursing for the study,**"A study to assess the knowledge, attitude and practice towards prevention of medication error in children among staff nurses working at selected settings in Chennai."** is validated by the undersigned and she can proceed with this tool to conduct the main study.

Dr. G. Sharavanan, MD (Paed)
Consultant Paediatrician & Neonatologist
Reg No: 56367
Billroth Hospitals Ltd.

DATE:

SIGNATURE

INFORMED CONSENT FORM

I have been informed about the purposes of the study being conducted by Ms.Ramya.E, M.Sc (Nursing) of M.A.Chidambaram College of Nursing, Adyar, Chennai and I have no objection in participating in the study. I also give my full consent for the use of this data for the purpose of any presentation or publication.

Signature :

Name :

Date :

Place :

TOOL TO ASSESS THE KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS PREVENTION OF MEDICATION ERROR IN CHILDREN

PART – A

DEMOGRAPHIC DATA

1.Age of the staff nurses

(a). 20-30 years

(b).30-40 years

(c).40-50 years

(d).50 years andabove

2.Gender

(a).Male

(b).Female

3.Educational status

(a).D.G.N.M

(b).B.Sc. NURSING

(c).P.B.B.Sc NURSING

(d). M.Sc. NURSING

4.Total years of experience as staff nurse

(a).Less than 1year

(b).1-5 years

(c).6-10 years

(d).11years and above

5.Total years of experience in pediatric unit/ward

(a).Less than 1year

(b).1-3 years

(c).4-6 years

(d).7years and above

6.The maximum working experience is in

(a)Paediatric Medical wards

(b)PaediatricSurgical wards

(c)PaediatricIntensive care areas/Neonatal intensive care units

(d)PaediatricOut patient departments/Emergency department

7. Currently working in

(a)PaediatricMedicalward

(b)Paediatric Surgical ward

(c)PaediatricIntensive care area

(d)Paediatricout patient department/Emergency department

8.Have you ever committed medication Error?

Yes

No

If did yes, what did you do?

(a)Not reveal to anyone

(b)Reported to senior staff nurses

(c)Informed and convinced parents

(d)Any others

PART-B

ASSESSMENT OF KNOWLEDGE TOWARDS PREVENTION OF MEDICATION ERROR

(Kindly answer all question and circle the appropriate option)

1. **Which one the following statement is right about medication error?**

a. Preventable event causing inappropriate medication use and harm to the client

b. Nonpreventable event causing inappropriate medication use to the children

c. Non Preventable event causing inappropriate medication use and harm to the children

d. Preventableevent causing harm to the children

2. **Which of the following is NOT preventable medication error?**

a. Selecting a drug without prior knowledge of the allergy

b. Selecting the wrong dose

c. Selecting the wrong duration

d. Overlooking drug-drug interaction

3. **A side effect or complication from a medication is a(n)**

a.Drug overdose

b.Late effect

c.Transition point

d.Adverse drug event

4. **Which of the following SHOULD NOTbe used to measure liquid medication for children**

a. Calibrated medicine cup

b. Clean spoon from the kitchen

c. Syringe provided by the child's parent

d. Commercially available calibrated medication spoon or cup

5. The best way to ensurethat the right medication is given is to

a. Ask the child if the medication looks like the right one

b. Ask someone you work with

c. Compare the label with the medication log and the written instructions

d .Call the health care provider who ordered the medication

6. What would you do when an error is made while documenting a medicationadministered?

a. Call the child's parents and confess

b. Use whitener and write over the error

c. Draw a single line through the error and mark it "error"and sign your initials

d.Drip out the page and start over

7.Which one of the following is NOT a step in medication administration?

a. Prescribing

b. Administration

c. Monitoring

d.Communicating

8. What are the sources of error in prescribing EXCEPT

a. Inadequate knowledge about drug indications

b. Prescribing for the wrong patient

c.Prescribing the wrong dose

d.Multitasking

9.The following are the administrationerror EXCEPT

a. Drug being given to the wrong patient

b. Drug being given through the wrongroute

c.Drug being given at wrong dosage

d. Drug being administered in emergency situation

10.The following are the types of monitoring errors EXCEPT

a.Inadequate monitoring for side-effects

b.Source of prescribed medication not completed

c.Medication not ceased once course is complete

d. Drug being given to wrong patient

11. The following are the staff factor leading to medication error EXCEPT

a.Inexperience

b.Multitasking

c.Rushing and emergency situations

d. Patients who have more than one doctor prescribing

12. A known effect, other than that primarily intended, relating to the pharmacological properties of the medication is called as

a. Side effect

b. Error

c. Adverse reaction

d. Adverse event

13.Which one of the factor causing medication error in children

a.Inadequate patient information

b. Weight and body surface area

c.Staff competency

d.Institutional policy

14.Which one of the following statement is right aboutdocumentation?

a. Document immediately

b.Document within half an hour

c. Document within one hour

d.Document after two hours

15.The following prevents calculation error EXCEPT,

a.Consistent measurement of preparation

b. Ignoring decimals

c. Calculate weight and body surface area

d. Double checking

16.What are all the sources of medication error?

a. Confusion between adult and pediatric formulation

b. Multiple dosing styles

c. look a- like and sound a- like medication

d. All of the above

17. The following are the methods for ensuring right dosage EXCEPT,

a. Consulting drug references

b. Considering developmental age

c. Calculating Accurate dosage

d. Considering Physical appearance

18. When will you give test dose for antibiotics?

a. Before giving full dose

b. Aftergiving full dose

c. Before every full dose

d. Immediately before giving

19.Which one of the following statement is correct?

a. Medication error is less in underfive children

b. Medication error is more in underfive children

c. Medication error is equal in allchildren

d. Medication error is more in adolescent children

20.In children less than one year of age, which formulation causes the medication error?

a. Liquid formulation

b. Tablet

c.Capsules

d.Injections

PART-C

ASSESSMENT OF ATTITUDE TOWARDS PREVENTION OF MEDICATION ERROR

Kindly put(✓)mark in the appropriate column

S. NO.	ITEMS	SA	AGREE	UC	DA	SDA
1	Nurses are responsible for safe administration of medication					
2	Nurses need to update their knowledge on pharmacology					
3	Nurses must be familiar with the policies related to medication administration					
4	Prescribing physician can be contacted for clarification regarding medication order					
5	Notifying prescription error to the prescriber will cause conflict					
6	Medication error committed need to be reported immediately to the prescribing physician					
7	Medication can be identified by its colour					
8	Nurses need to check the rights related to medication administration					
9	Use of abbreviations in medication dose expression help in safe administration of drug					
10	It is better to check once again if the hand writing is not clear.					
11	Staying with the child until an oral medication is swallowed is waste of time					
12	Medication prepared by others can be administered without verification.					
13	Mild side effect of a drug can be ignored and need not be reported					
14	Any medication error which may not harm the child need not be informed					
15	All medication errors need to be documented					
16	Reporting medication error will make others to underestimate ones capabilities					

1. **SA-Strongly agree**
2. **A- Agree**
3. **U- Uncertain**
4. **DA-Disagree**
5. **SDA-Strongly disagree**

PART-D

ASSESSMENT OF PRACTICE TOWARDS PREVENTION OF MEDICATION ERROR

Kindly tick the option (yes/no)in the appropriate column

S.NO	QUESTIONS	YES	NO
1	**PREPARATION:** Identifies the child		
2	Checks the physician order for 1. name of the medication 2.dose 3.route 4. frequency		
3	Checks child's health record for allergies		
4	Collects appropriate articles necessary		
5	Sets up the tray		
6	Performs hand hygiene		
7	Selects the right medication		
8	Compares the name of medication on label		
9	Checks expiry date for each medication		
10	Calculates mediation dose as necessary		

S.NO	QUESTIONS	YES	NO
11	**ORAL:** Prepares tablet/pours the desired volume medication **IV** : Loads accurate medication. Prepares without bubble.		
12	**ADMINISTRATION:** Identifies the right patient		
13	Performs necessary pre-administration assessment		
14	Assesses the five rights		
15	ORAL: Administers medication. Stays till the child swallows medication IV 1.With Cleans the injection port with antiseptic swab. 2. Checks for blood returns and flushes saline. 3. Injects medication slowly. 4. Cleans the port and recaps.		
16	Monitors patient response to the medication		
17	Disposes the waste and replaces the articles		
18	Performs hand hygiene		
19	**DOCUMENTATION:** Documents the 1.name of the drug 2.time of administration 3.dose of the medication 4.route of medication 5.freqency of medication 6.any side effect		
20	Follows principles of documentation		
	GENERAL CONSIDERATIONS:		

S.NO	QUESTIONS	YES	NO
21	Prepares medication for one patient at a time		
22	Dilutes and Mixes medication as per instruction and institutional norms		
23	Checks any contraindication for administration of medications.		
24	Follows principle of medication administration		
25	Follows aseptic techniques		
26	Communicates appropriately to the child and caregivers		

SCORING AND INTERPRETATION:

KNOWLEDGE:

Knowledge was assessed using 20 multiple choice items. Each right answer was given a score of one and the total score was calculated. The total score was 20.

The percentage as calculated as follows:-

Percentage$= \frac{ObtainedScore}{TotalScore} x\ 100$

Based on the percentage, the samples knowledge was grades as follows:-

PERCENTAGE	GRADE
> 75%	Adequate knowledge
50-75%	Moderately adequate knowledge
< 50%	Inadequate knowledge

ATTITUDE:

Each positive item was given score like strongly agree-5, agree-4, uncertain-3, disagree-2 and strongly disagree-1. Each negative item was given score like strongly disagree-5, disagree-4, uncertain-3, agree-2, strongly agree-1. The total score was 80.

The percentage was calculated as follows:-

Percentage $= \frac{ObtainedScore}{TotalScore} x\ 100$

Based on the percentage, the samples attitude was graded as follows:-

PERCENTAGE	GRADE
> 75%	Favourable attitude
0-75%	Moderate attitude
<50%	Unfavourable attitude

PRACTICE:

Checklist was used to observe the practice, which consisted of 30 items. Each appropriate practice (Yes) carried one mark and inappropriate practice (No) carried zero mark. The total score was 30.

The percentage was calculated as follows:-

Percentage $= \frac{ObtainedScore}{TotalScore} x\ 100$

Based on the percentage, the samples practice was graded as follows:-

PERCENTAGE	GRADE
> 75%	Good practice
50-75%	Moderate practice
< 50%	Poor practice